NOVEMBER 17, 1952

Brown

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

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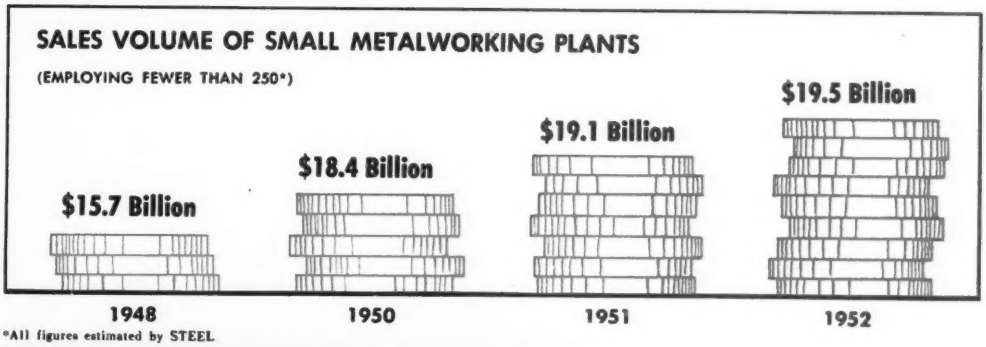
SMALL BUSINESS IN ACTION



*All figures estimated by STEEL

On-the-spot decisions like this help Michigan Crane prosper. See this small firm's case study (p. 67)

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take a CLOSER LOOK at
B&W STAINLESS TUBING DATA

Mr. Tubes—your nearby B&W Tube Representative—will be happy to provide additional information and to discuss any specific tubing problem with you.

Engineering data on stainless steel tubing . . . prepared by engineers for engineers . . . pours out of Babcock & Wilcox headquarters in an endless stream of technical literature and other communications, to keep designers, stainless fabricators and process engineers well-informed about latest stainless tubing developments and applications, and to provide an interchange of field experience among stainless tube users.

Important findings of metallurgists and application engineers, of chemists and other specialists concerned with corrosion resistance, fabrication and special tubing needs are condensed and published in ready-reference form as fast as data can be reviewed and verified.

B&W offers a most comprehensive file of information on stainless tubing, both seamless and welded. The technical help this literature offers is exceeded only by the personal assistance on specific tubing problems you may expect from B&W field representatives.

If you want stainless tubing facts where you can find them—tips to help you speedily solve tubing problems and to suggest ideas for greater stainless tubing service satisfaction—send for B&W bulletins you may select from this partial list of current data.

YOURS FOR THE ASKING

TB-1	Properties and Methods of Working Seamless and Welded Tubes and Pipe of the B&W Stainless Croloys
TB-11	Specifications for Seamless and Welded Tubular Products—Stainless, Alloy and Carbon Steels
TB-15	Weight Tables, Round Seamless and Welded Steel Tubing
TB-19	B&W Stainless Croloy Tubing Steels—Seamless and Welded, Condensed Technical Data
TB-332	B&W Stainless Pipe, Seamless and Welded
TB-335	Descriptive Terms, Steel Tubing, B&W Seamless and Welded Tubes
TB-344	Applications of B&W Tubular Products—Stainless, Alloy and Carbon Steels, Seamless and Welded
TR-506	Properties and Characteristics of 27% Chromium-iron
TR-516	Some Experiences in Service—Power, Oil, and Chemical Plants
TDC-130	B&W Stainless Pipe and Tubing — Croloy 18-8S (Type 304) for Pressure and Mechanical Uses
TDC-132	B&W Stainless Pipe and Tubing — Croloy 18-8Cb (Type 347) for Pressure and Mechanical Uses
TDC-133	B&W Stainless Pipe and Tubing — Croloy 16-13-3 (Type 316) for Pressure and Mechanical Uses
TDC-134	B&W Stainless Pipe and Tubing — Croloy 25-20 (Type 310) for Pressure and Mechanical Uses
TDC-138	B&W Pipe, Seamless and Welded—Carbon, Alloy and Stainless Steels—Dimensions, Weights, Specifications, Grades, Analyses
TDC-140	B&W Stainless Pipe and Tubing — Croloy 12 Al (Type 405), Croloy 18 (Type 430), Croloy 27 (Type 446) for Pressure and Mechanical Uses
TDC-143	B&W Stainless Tubing—Croloy 12 (Type 410), Croloy 12-2 (Type 414) for Pressure and Mechanical Uses
TDC-148	Condensed Data on Working Seamless and Welded Tubing and Pipe—B&W Croloy Stainless Steels
TA-1517	B&W Stainless Steel Tubing for the Food Processing Industry
TB-328	How to Keep Down Maintenance Costs in Pulp and Paper Mills—B&W Tubing and Pipe, Stainless, Alloy and Carbon Steels

Simply request the bulletins you want on your company letterhead, and tell us if you wish to receive new bulletins when available.

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION

General Offices & Plants
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

Sales Offices: Beaver Falls, Pa. • Boston 16, Mass. • Chicago 3, Ill. • Cleveland 14, Ohio • Denver 1, Colo. • Detroit 26, Mich. • Houston 19, Texas • Los Angeles 17, Cal. • New York 16, N. Y. • Philadelphia 2, Pa. • St. Louis 1, Mo. • San Francisco 3, Cal. • Syracuse 2, N. Y. • Toronto, Ontario • Tulsa 3, Okla.

B&W SEAMLESS and WELDED TUBES

BOLTED CONSTRUCTION IS FAST... EFFICIENT ...QUIET

New Booklet Gives Data on High-Strength Bolting

We have a new 8-page booklet, "High-Strength Bolting for Structural Joints." It's chock-full of data on structural bolting, and includes the information that needs to be supplied in ordering high-strength bolts. For your copy, write to us at Bethlehem, Pa.

BETHLEHEM STEEL

Steelwork can be erected quickly, and quietly as well, when Bethlehem High-Strength Steel Bolts are used to join the structural members.

Bethlehem High-Strength Bolts save time because they are so easy to handle. They provide a secure joint, and are used in place of field-driven rivets. No change in shop work is necessary, as the bolts do not require a driving fit.

In assembling Bethlehem High-Strength Bolts, a hardened washer is placed under both the head and nut. This permits the development of the high torque required, without scoring the connected material. The hexagonal nuts are driven up on the bolts so tightly that there is no possibility of slip at working loads.

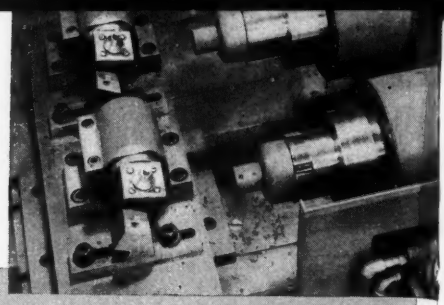
Bethlehem High-Strength Bolts are made from carbon steel, and are produced at our fastener plant at Lebanon, Pa. They are heat-treated by quenching and tempering to conform to the requirements of ASTM Specification A-325. Write for full information.

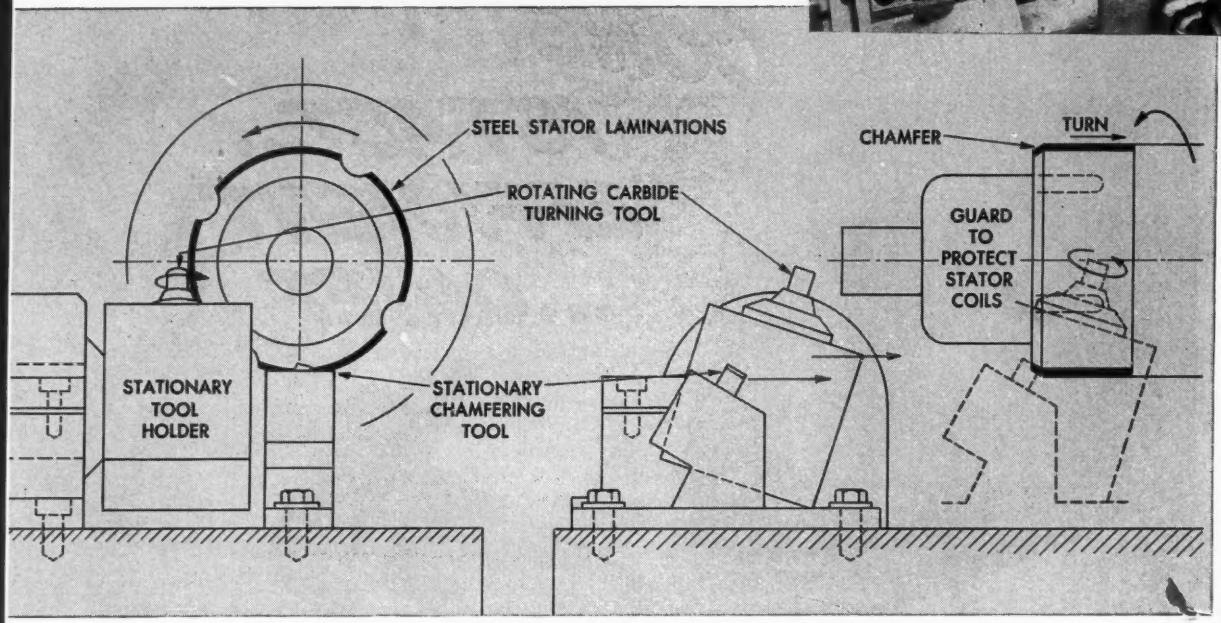
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Bethlehem supplies every type of Fastener

ROTATING TOOL
does a good turn





End and side view sketch of rotating tool setup for turning motor stator assemblies on Heald Model 221 Bore-Matic.

Free-turning tool arrangement on Heald Model 221 Bore-Matic gives longer tool life on steel stator job

• Although this unusual setup is rather limited in application, it's an interesting example of how Heald engineering solved a specific precision finishing problem.

The parts, laminated steel motor stator assemblies with interrupted surfaces, are turned and chamfered, two at a time, in a single high-speed automatic cycle. The carbide turning tools are free to rotate in their tool holders, and are driven on their own longitudinal axis by contact with the rotating surface of the work. Hence a new, cool cutting edge is continually being presented to the work, materially increasing the effective life of the tool.

As the motor stators are precision finished with the coils and leads in place, a guard or shield is attached to the open end to keep out metal shavings.

Remember — when it comes to precision finishing it pays to come to Heald.

HEALD

Heald precision speeds the nation's production

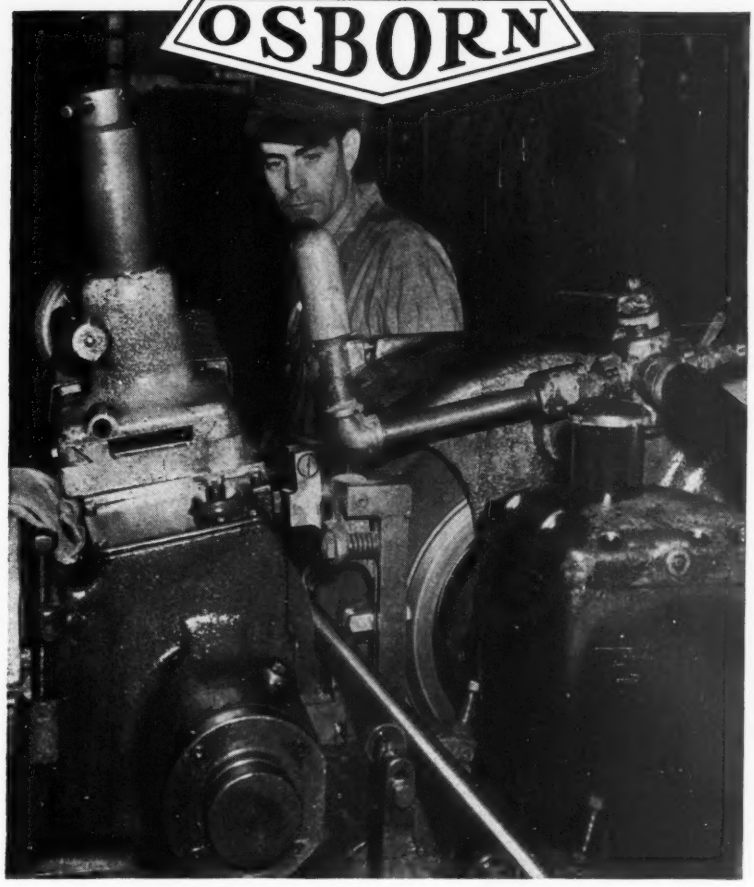
INTERNAL AND ROTARY SURFACE GRINDING MACHINES AND BORE-MATICS

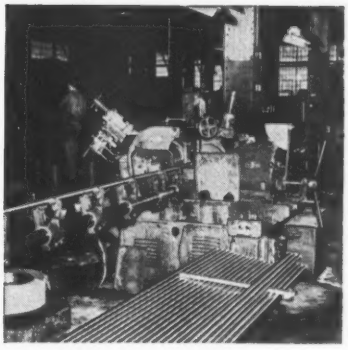
THE HEALD MACHINE COMPANY

WORCESTER 6, MASSACHUSETTS

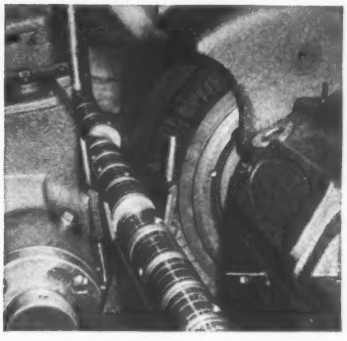
Branch Offices: Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York

OSBORN





THE SET-UP. This shows the centerless grinding machine which also serves as a "centerless brusher". These pump rods vary from 1⅛ in. to 1½ in. diameter . . . from 6 ft. to 36 ft. in length. Regulating wheel speed is 52 r.p.m.



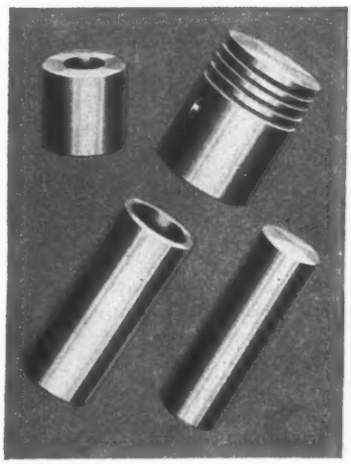
ANOTHER JOB. Here Centerless Brushing finishes cast iron pistons to micro-smoothness. Simplifies assembly operations and increases life of pistons and cylinders. Output of this machine is 10,000 pieces per 8 hours.

Finer finish . . . longer product life with Centerless Brushing

This machine does double duty. For removal of metal to close tolerance, it is a *centerless grinder.* Then, for finishing the surface to micro-smoothness it is a *centerless brusher.* Its conversion takes only a few minutes.

In the operation shown above, nickel-moly steel rods for pumps, are being finished by an Osborn Fascut Brush. Prior to brushing, the same machine with a grinding wheel in place of the brush made a rough grind, taking off .006 inch, and a finish grind, taking off .002 inch. Results of the Centerless Brushing: Produces a smoother finish. Reduces wear in pump packing. Reduces corrosive action on rods; makes them last longer.

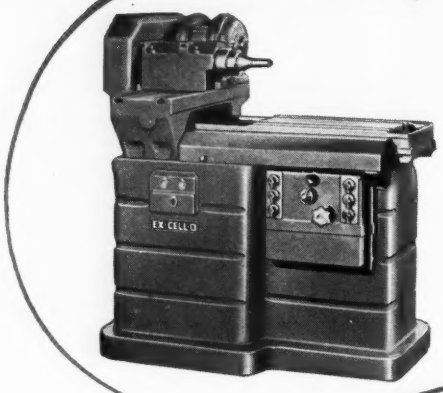
An **O**sborn **B**rushing **A**nalyst helped develop this improvement. Ask your **OBA** to help *you* on all problems of cleaning and finishing! Call him today or write *The Osborn Manufacturing Company, Dept. 866, 5401 Hamilton Avenue, Cleveland 14, Ohio.*



TYPICAL PARTS which are being improved by Centerless Brushing include pistons, piston pins, bushings, tubing . . . any cylindrical parts. It can be applied to many sizes of parts and types of material on a mass production basis.

Osborn Brushes

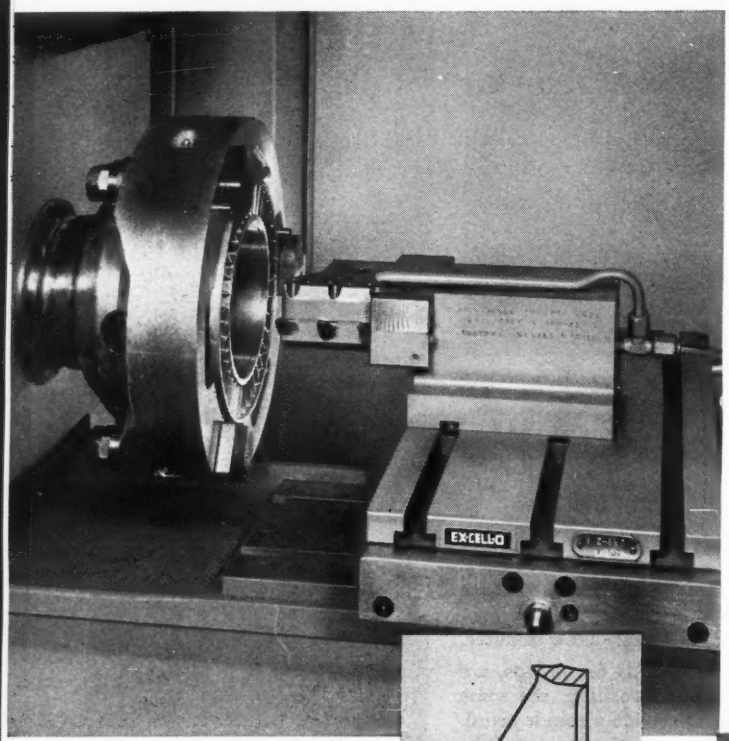
OSBORN POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES



Maximum Flexibility

WITH MINIMUM TOOLING

Ex-Cell-O Style 1212-A
Precision Boring Machine



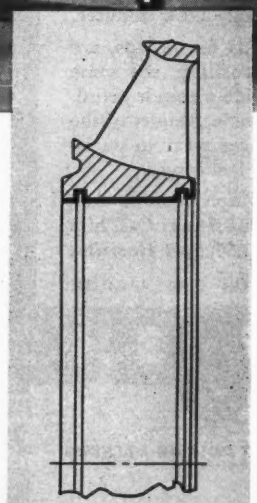
Standard Ex-Cell-O Machine Bores, Grooves, and Faces

It's advantageous to use standard machines and standard items of tooling whenever possible. You cut engineering time, save money, and get your machine sooner.

The set-up illustrated handles several operations on two similar aluminum tank transmission parts with a minimum of special tooling. Machine, hydraulically operated cross slide, spindle, spindle bridge, motor bridge, and control equipment are all standard items. Only the chuck and tool block are special.

Here is a typical example of the flexibility and economy that are yours with Ex-Cell-O Precision Boring Machines. See your local Ex-Cell-O representative or contact Ex-Cell-O in Detroit.

View of tooling set-up for rough- and finish-boring, counterboring, grooving and facing of tank parts.



Sectional view showing operations in heavy lines.

XLO
EX-CELL-O *for* PRECISION

EX-CELL-O
CORPORATION
DETROIT 32, MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • CUTTING TOOLS
RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT
AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

52-12

This Week in Metalworking

STEEL

Vol. 131 No. 20 Nov. 17, 1952

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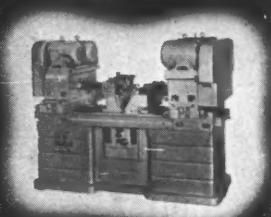
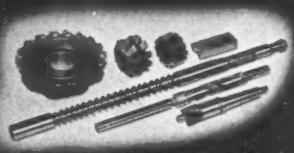
XLO
EX-CELL-O for PRECISION

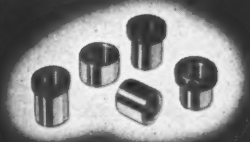


PRECISION MACHINE TOOLS

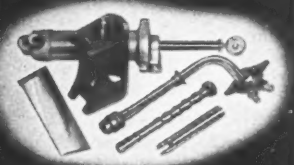


CONTINENTAL CUTTING TOOLS

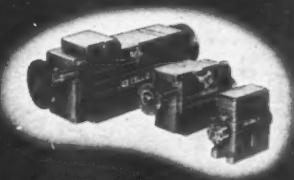
PRECISION GRINDING SPINDLES



DRILL JIG BUSHINGS



AIRCRAFT AND PRECISION PARTS



HYDRAULIC POWER UNITS

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EX-CELL-O
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DETROIT 32, MICHIGAN

Need HEAVY industrial GEARS in a hurry?

Call SIMONDS First!

A call to SIMONDS gives you the benefit of more than 60 years of specialization . . . assures fast, accurate reproduction of the most exacting specifications . . . and SIMONDS' central location cuts delivery time to a minimum. For all types of heavy industrial gears, up to 145" dia. and including cast or forged steel, gray iron, bronze, Meehanite, rawhide and bakelite—SIMONDS' production is geared to serve you promptly.

Stock carrying distributors for Ramsey Silent Chain Drives and Couplings, Industrial V-Belts.

SIMONDS GEARS

THE SIMONDS GEAR & MFG. CO.

LIBERTY at 25TH PITTSBURGH 22, PA.

Behind the Scenes...

Editorial Techinque

To the east of here the editors have worked up a series of stories all on the same subject—small business. Although all aspects of that complex matter can't be scrutinized at once, the major points can be studied, as they are in this issue in a half-dozen separate stories. The editors have used before this technique of exploring in a single issue several aspects of a complex subject; the last time was Sept. 1 when they analyzed labor trends.

More such editorial jobs are coming up. We'll keep you posted.

Red Tape

Dick Lurie, editor of *American Exporter,* in his comments of his trip to India tells about how the government over there put a ban on imports of auto bulbs. They forgot that India made all sorts of electric light bulbs except those for cars. It took the trade a long time to convince the government that transportation equipment would only be able to move in daylight hours because of this restriction.

As a result bulbs were put on open general license. Everybody jumped on the band-wagon and the market was flooded. Bulbs are still selling at below imported cost. Rumor has it that some of the trade was smashing the bulbs at the docks and putting in for insurance claims.

The Catch

Out in New York City we see they have two vacancies in the Department of Public Works. Pay is $4016 per annum.

Duties are to inspect in the field the erection or repair of both welded and riveted steel structures for buildings, bridges, elevated highways, rapid transit railroads, etc.

Candidates must also be willing to climb high structures. The line forms to the right.

Construction

Assistant Managing Editor Vance Bell substantiates the theory that anything can happen in Washington. He got off the elevator to go to his hotel room one evening and found a worker outside his door trying to get in the room. Along with him he had a wheelbarrow full of sand and cement.

After some careful thinking, however, it worked out OK. The worker had the right room, wrong floor.

Shaggy Dog Story

A radio news announcer tells about two brothers that were picked up for biting a dog.

When the police got them downtown the brothers readily admitted the charge but wouldn't say why they had done it.

Pride, we'd say. At today's food prices we'd acquit them with a ruling of justifiable disturbance. Even so, we don't like ours that rare.

It's Only Money

U. S. District Court at Los Angeles the other day fined and sentenced an automobile sales manager and fined his firm in a criminal case involving the sale of a 1950 Cadillac automobile for $845 above ceiling.

Six months jail sentence was suspended on the following conditions: Three years probation, payment of fine, obedience to all city, state and federal laws and return of overcharge of $845 *if the buyer wants it.*

We've sat here for over an hour now and we'll be hanged if we can think of any reason why the buyer wouldn't want the money back. We think we'd be willing to risk it and just take the old wad.

Puzzle Corner

It would take 4 hours, 36 minutes and 55 seconds to fill the swimming pool in the problem of Nov. 3. First in with that answer were L. D. Rice of Timken Roller Bearing Co. and Karl Kassel of Republic Steel Corp.

From a pint bottle of wine a glass of wine is poured. The glass is then poured into a jug containing a pint of water. The glass is filled with the mixture and poured into the bottle of wine. Has more wine been taken from the bottle than water has been taken from the jug, or vice versa?

Shrdlu

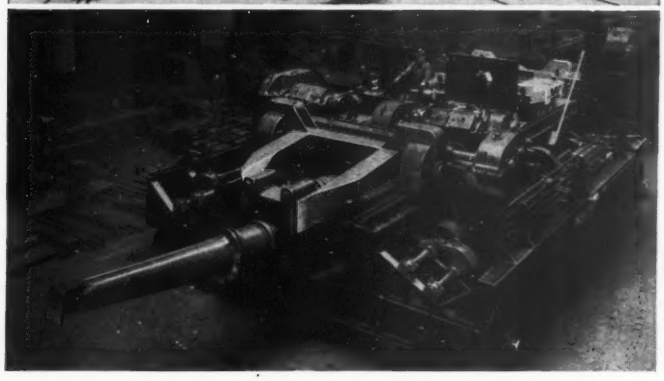
(Metalworking Outlook—Page 49)

Wellman will build it

Special Cranes
Charging Machines
Ore Unloaders
Forging Manipulators
Car Dumpers
Gas Flue Systems
Gas Reversing Valves
Coke Pushers
Mine Hoists
Skip Hoists
Ore and Coal Bridges
Clamshell Buckets

Wellman charging machines

efficiently serve open-hearth furnaces



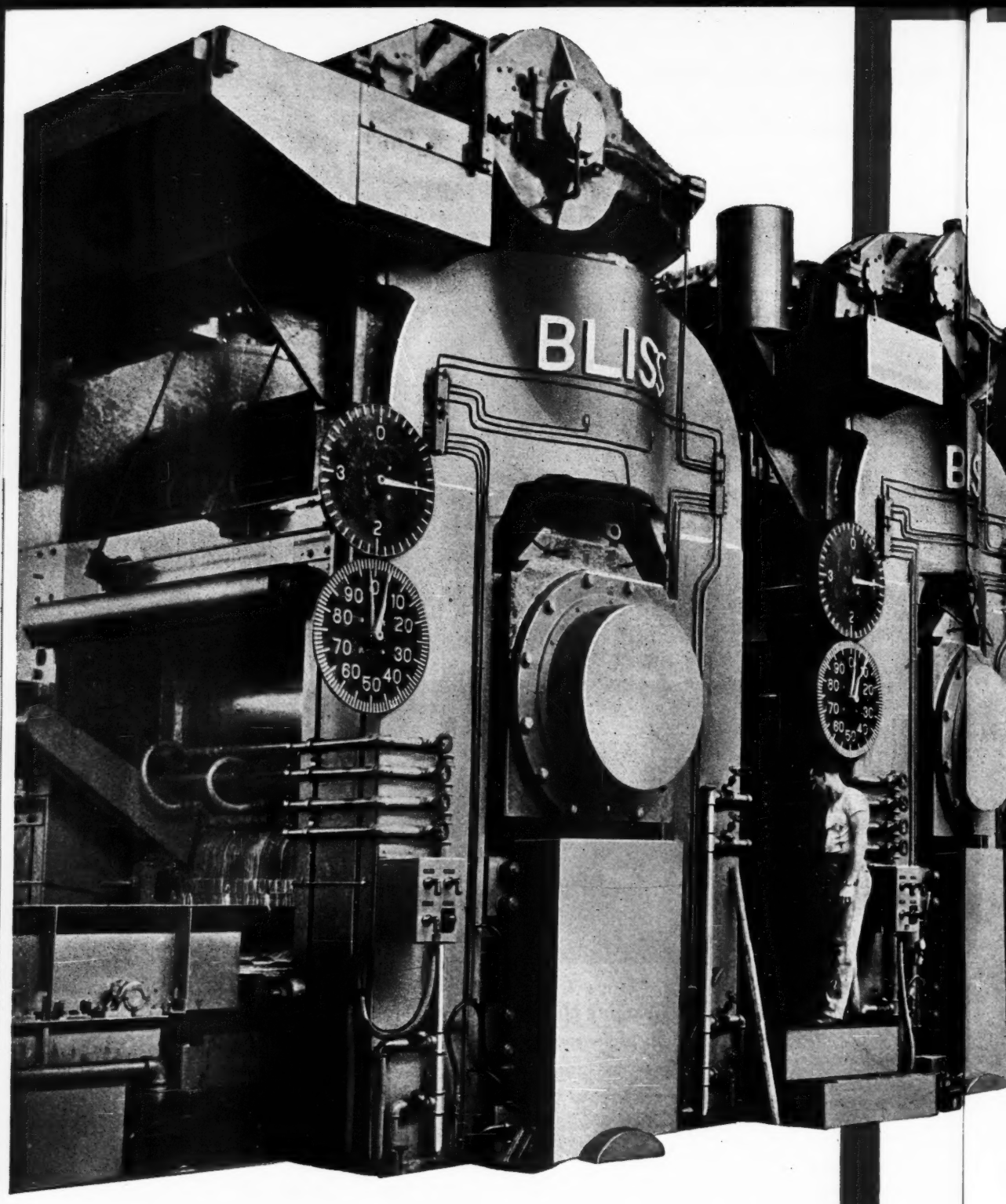
Above:
Wellman High-Type, Open-Hearth Charging Machine.

Below:
Wellman Low-Type Charging Machine.

● Wellman Charging Machines for open-hearth furnaces are available in the high-type shown above and in low-type shown in inset. These machines are typical of all Wellman equipment. They are backed by more than a half-century of experience in designing and building for efficient performance. You can have utmost confidence in Wellman recommendations.

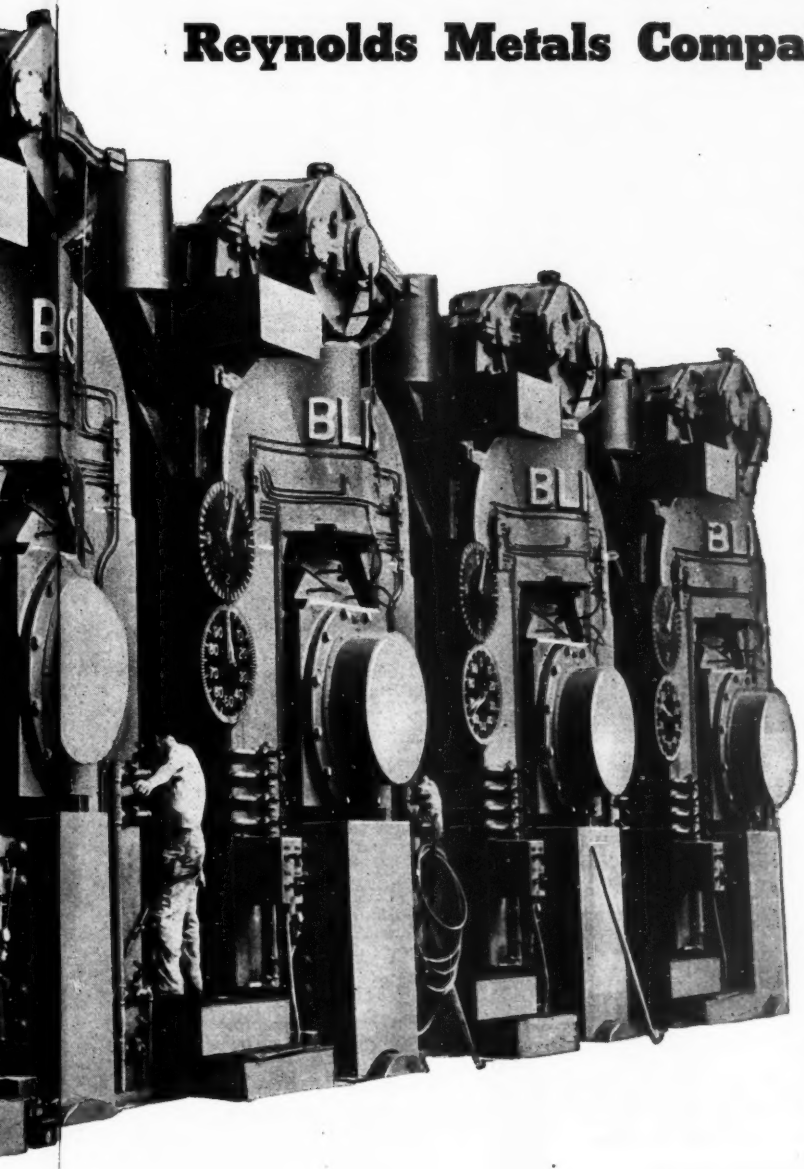
THE WELLMAN ENGINEERING COMPANY

7000 CENTRAL AVENUE · CLEVELAND 4, OHIO



Remember: **for Presses, ROLLING MILLS and Special Machinery...** ***It's BLISS!***

BLISS Mill rolls 2,000,000 lbs. of aluminum in eight hours for Reynolds Metals Company



Here's another Bliss rolling mill installation whose *performance* speaks for itself.

For several years a Bliss five-stand, four-high 80" tandem mill has been hot-rolling huge quantities of aluminum sheet at the McCook (Ill.) plant of Reynolds Metals Company.

This leading aluminum producer has rolled as many as 570 ingots on the Bliss mill in an eight-hour shift. Maximum production, poundage-wise, has exceeded 2,000,000 lbs. in one shift.

The mill is now processing all the material produced on Reynolds' 120" and 96" ingot and slab breakdown mills. Average delivery gage is .120" with a maximum speed of 850 fpm, and minimum width is approximately 24". Ingot starting sizes vary from 10" x 30" to 16" x 48".

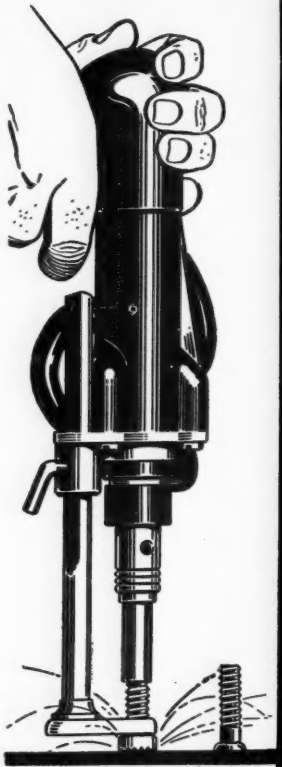
Like Reynolds, other major processors of aluminum, steel and brass are using Bliss rolling mills to step up plant efficiency and boost vital metal production. You, too, will find it's wise to take your metal-rolling problems to Bliss. Get a complete picture of the Bliss line of mills and accessories. Write for our 52-page brochure, Bulletin No. 40.

E. W. BLISS COMPANY, General Office: Canton, Ohio

ROLLING MILL DIVISION: SALEM, OHIO

E. W. Bliss (England) Ltd., Derby, England E. W. Bliss Company (Paris), St. Ouen sur Seine, France
Branch offices in Chicago, Cleveland, Dayton, Detroit, Indianapolis, New Haven, New York, Philadelphia, Toledo, Rochester; and Toronto, Canada. West Coast Representatives: Moore Machinery Company, Los Angeles and San Francisco; Star Machinery Company, Seattle. Other dealers in United States cities and throughout the world.

BIG SAVINGS LIKE THIS...



AN ELECTRIC ARC WELDING PROCESS

DRILLING, TAPPING AND BOSSES ELIMINATED

...A superior switchgear product plus 20 per cent reduction in its selling price, resulted from Nelwelding, according to a leading manufacturer.

MANUAL ARC WELDING ELIMINATED

...Elimination of a manufacturing bottleneck by using the Nelweld method enabled a boiler company to boost production 25 per cent.

MATERIAL HANDLING GREATLY REDUCED

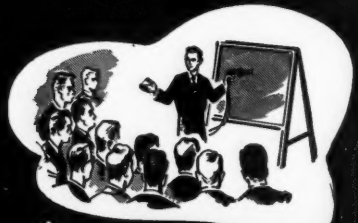
...By taking the tool to the work, Nelweld not only reduced material handling costs but cut fastening time on large coal pulverizers from 8 hours to approximately 53 minutes.

PUNCHING AND THROUGH BOLTING ELIMINATED

...Man-hours saved by Nelwelding in making refrigerator cars enables a leading car shop to increase productivity one car per day.

...OFTEN STEM FROM A NELWELD FASTENING CLINIC

• The Nelweld clinic can show you – right in your own plant how you can benefit from this modern fastening method.



Investigate Now!

Write today to Lorain, Ohio for the Nelweld Clinic Brochure.

Fasten it Better... at Less Cost, with NELWELD

NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO

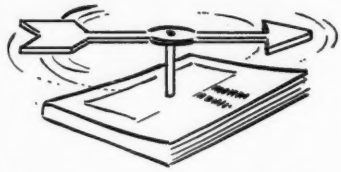
LETTERS TO THE EDITORS

Salty Recommendation

This office can make very good use of STEEL and we are very glad to be able to receive it. We know the information we find in STEEL is authentic and we are so glad also to be able to consult you about problems that may arise concerning steel products. We are shipbuilding inspectors and the steel industry is, as you know, very closely allied with shipbuilding.

W. B. Brewer
Inspector, United States Navy
Jacksonville, Fla.

Tool Guide: A Best Seller



Please send me four copies of your booklet "Guide for Selecting Tool Steels and Carbides" a special report by the editors of STEEL (June 16).

I saw this booklet for the first time today and believe it is the most complete tool steel reference I have seen.

E. D. Holvenstot, buyer
Collins Radia Co.
Cedar Rapids, Iowa

. . . please send two copies of the Tool Steel Guide.

Fred Svendsen
engineering department
Quality Hardware & Machine Co.
Chicago

. . . we're wondering if it would be possible for us to have 12 copies of this very complete list of tool steel trade names and their companies.

L. F. Ronan, president
Diamond Saw Works Inc.
Buffalo, N. Y.

. . . send us five copies of the "Guide".

Herbert A. Spiess
executive vice president
Midwest-Overseas Trading Corp.
Milwaukee

• *These and many other requests for the tool steel guide are being filled.—ED.*

Repeat on Testing Story

On pages 158 through 163 of your Oct. 13 issue is the article entitled "Nondestructive Testing". We are requesting permission to reprint this for distribution to our members. Credit would, of course, be given.

J. R. Derrickson
Formed Steel Tube Institute
Cleveland

• *Permission granted.—ED.*

Plastic Dies for Metal?

In STEEL (Oct. 13, p. 111) there's an item titled "Hot Development: Plastic Dies". I would appreciate very much any further information you can give

Continued on following page

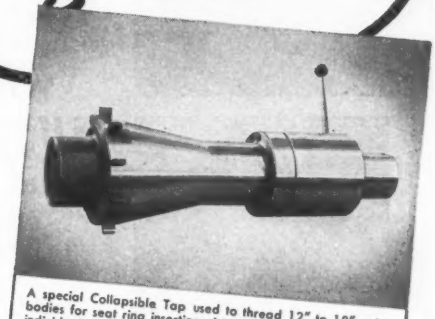
Need Help on Difficult Threading Jobs?

LANDIS ENGINEERS DEVISE SPECIAL EQUIPMENT & METHODS FOR "HARD-TO-THREAD" WORKPIECES

Don't let the production of an unusual thread hinder an otherwise efficient manufacturing process. Hundreds of companies are today, with *LANDIS* equipment, profitably generating threads formerly considered impossible or too costly for practical operation.

We offer to all manufacturers aid in solving problems in all phases of thread production. We will consult on the original design to insure that the proper thread to best serve a particular function is employed; we will advise as to the best standard equipment to produce a specific thread; we will develop special tooling for the production of an unusual or difficult thread; we will design special holding fixtures for threading workpieces that are difficult to chuck; or we will work out special methods to best fit multiple threading operations into the complete production process.

The illustrations show three examples of such Threading Problems solved by our Engineering Department. No matter what *your* Threading Problem—let our years of Thread Experience and Engineering Know-How work with you in its solution. Write or call *LANDIS* today.



A special Collapsible Tap used to thread 12" to 18" valve bodies for seat ring insertions. LANDIS Valve Seat Taps are individually engineered for their particular usage and are supplied to tap valve bodies from the 2" to the 24" size.

Double Diameter Chasers used to generate threads on reducing bushings and similar workpieces. These chasers cut threads on two different diameters simultaneously; thus, eliminating a second operation. Pitch and thread form for the two diameters must be identical and other limitations necessitate individually designed chasers for threading parts of different dimensions.

A LANCO Taper Cutting Head designed for producing tapered threads up to 2¼" in length and to unusually close tolerances. The die head can be converted to cut a reverse taper by the simple application of a reverse taper cam. Diameters from ½" to 2" and tapers ranging from zero to 2" per foot can be cut with this LANDIS Head.

LANDIS *Machine* CO.

WAYNESBORO · PENNSYLVANIA · U.S.A.

THE WORLD'S LARGEST EXCLUSIVE MANUFACTURERS OF THREAD GENERATING EQUIPMENT

FOR THE
AUTOMOTIVE and
Heavy Construction
Equipment
Industries

Two thousand transmission shafts per day are easily and dependably tested for hidden internal defects with a Sperry Reflectoscope.

WHERE PARTS
MUST NOT FAIL
THE Sperry
ULTRASONIC
REFLECTOSCOPE
PROVIDES FAST, DEPENDABLE
100% TESTING

A huge kingpin is tested for flaws through its entire length.

Reflectoscope testing this steering gear will reveal any hidden defects in the metal or in the weld where the two ends are joined.

AUTOMOTIVE INDUSTRY: A dangerous accident caused by the failure of an important part would seriously damage the reputation of an automobile manufacturer. For this reason, the Molloy Manufacturing Company of Detroit — producers of COLD FORGED steel transmission shafts for two major automobile corporations — rely on Sperry Reflectoscope testing to eliminate the possibility of hidden defects in their product.

HEAVY CONSTRUCTION EQUIPMENT: The "Tournarocker", manufactured by R. G. LeTourneau, Inc. of Peoria, is a powerful, high-speed, materials-handling machine that can carry *18 tons* fully loaded. Capable of traveling at 35 m.p.h., it is extensively used wherever huge amounts of material must be moved. As any parts failure on-the-job would, obviously, be dangerous and cause costly delays, the Le Tourneau Company looks to Sperry Reflectoscope testing to assure that nothing but defect-free axles, gears and kingpins are incorporated in the "Tournarocker".

Learn how you can reduce testing costs and improve quality control in your plant. Write today for complete information about the Sperry Reflectoscope . . . for sale, or for lease. *Ask about Sperry's day to day Testing Service.*

Sperry
SPERRY PRODUCTS INC.
611 SHELTER ROCK ROAD
Danbury, Connecticut
REPRESENTATIVES IN PRINCIPAL CITIES

LETTERS

Concluded from preceding page

me as to what sort of die these are. I am particularly interested in knowing whether they can be used for forging small parts. Any further information would be appreciated.

Roger D. Prosser
Thomas Prosser & Son
New York

• *For further information about plastic dies, see* STEEL, *Sept. 15, p. 92, which describes a die material made by Rezolin Inc., Los Angeles. The item in the Oct. 13 issue refers to a laminated plastic die from materials supplied by Renaud Plastic Inc., Lansing, Mich. We know of one company which is experimenting with forging small parts using plastic dies.* STEEL *hopes to be able to give some details on the process in the future.—ED.*

Cranial Computer Aids Steel

In the Nov. 3 issue of STEEL there appeared on p. 106 an article entitled "Electric Brains Expand Steel's Muscles" by W. R. Harris.

I would appreciate receiving three sets of tear sheets and two complete copies of that issue.

H. Dermaris
Westinghouse Electric Corp.
Pittsburgh

• *They're on the way.—ED.*

Ready Made Handbook

RUSH 25 COPIES OF BLAST FURNACE PRACTICE TO TRAINING DEPARTMENT, ARMCO STEEL CORP., ASHLAND, KENTUCKY. SENDING CHECK UNDER SEPARATE COVER.

Jim Kelley
Pittsburgh

• *Sent.—ED.*

New Middleweight Contender

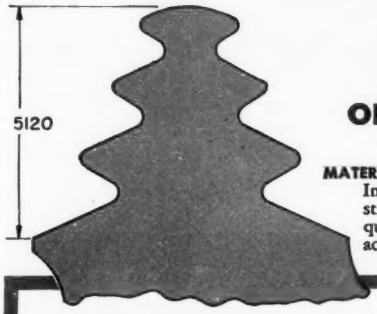
The article titled "Titanium: Middleweight Metal Grows Up" (Oct. 20, p. 63) is most interesting and we would like to have it reprinted for distribution to our members. Proper credit would be given to STEEL.

J. R. Derrickson
executive secretary
Formed Steel Tube Institute
Cleveland

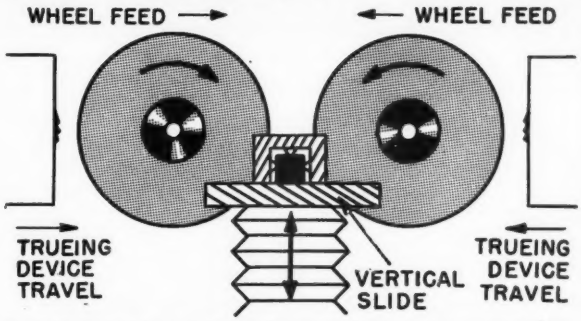
• *Permission granted.—ED.*

FORM GRINDING
JET ENGINE BUCKET ROOTS
FROM THE SOLID!

ON J & L DUAL-WHEEL AUTOMATIC FORM GRINDERS



MATERIAL BORDERS ON UNMACHINABLE Intense heat and great centrifugal stresses on the pressure surfaces require the toughest material and most accurate finish.



Bucket is mounted on a reciprocating vertical slide for two-way grinding.

AUTOMATICITY SPEEDS PRODUCTION — MAINTAINS REPETITIVE ACCURACY — Operation is simplified to the push button stage by a completely automatic work cycle.

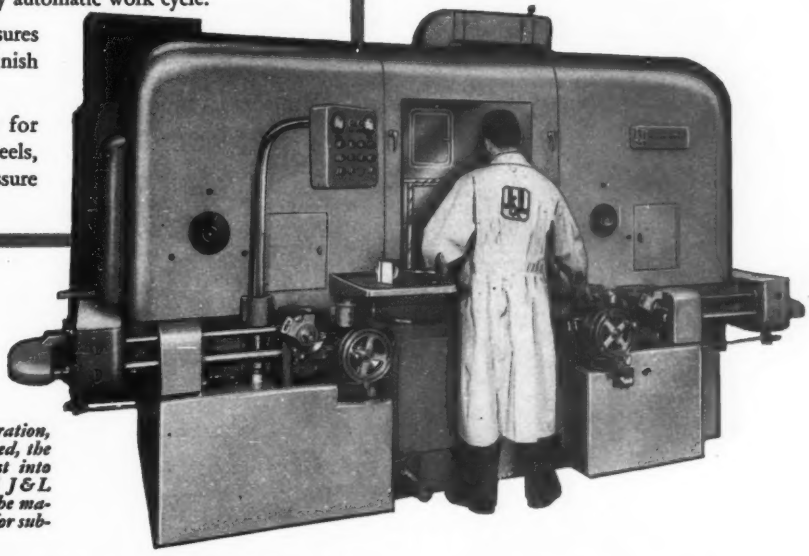
Automatic wheel trueing assures accuracy of form — includes finish trueing before final cut.

Automatic compensation for amount dressed off the wheels, and automatic wheel feed assure accurate sizing.

FEW MORE DIFFICULT GRINDING JOBS EXIST — Yet both sides of the root are ground simultaneously, to gage tolerances, on a production basis.

REPETITIVE ACCURACY MAINTAINED
Spacing of pressure surfaces within .0002
Taper within .0005
Angles within 10 minutes
Thickness from .0005 to .001

ACHIEVEMENT RESULT OF SEVERAL YEARS' RESEARCH AND EXPERIMENTATION — This application of the proven principles, long incorporated in J & L Thread Grinders, was initiated several years ago. The first machine was delivered in 1948. Continued study and subsequent refinements have helped lick one of the toughest machining problems of our day. Perhaps we can help you too.

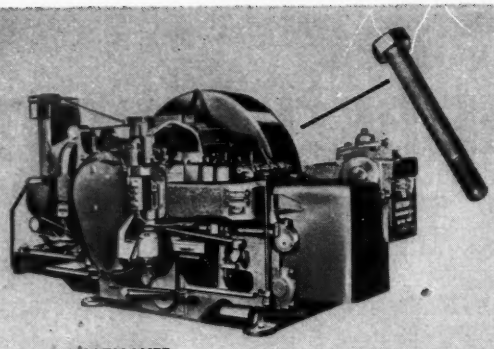


Before the grinding operation, the foil contour is checked, the blade oriented and cast into a matrix, on a special J & L Optical Comparator. The matrix serves as a fixture for subsequent operations.

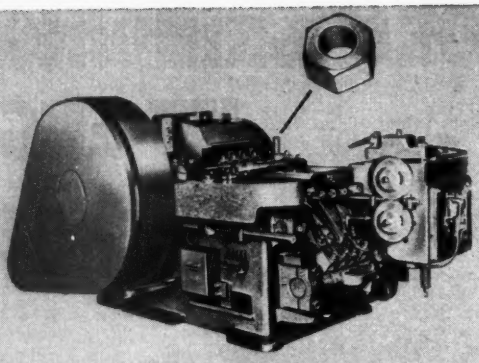
JONES & LAMSON

Machine Tool Craftsmen Since 1835

JONES & LAMSON MACHINE CO., Springfield, Vt., U.S.A. Dept. 710 — THREAD GRINDER DIVISION

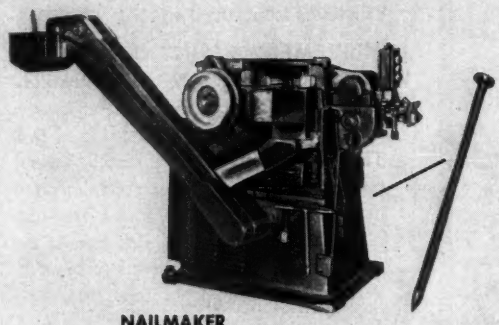


BOLTMAKER

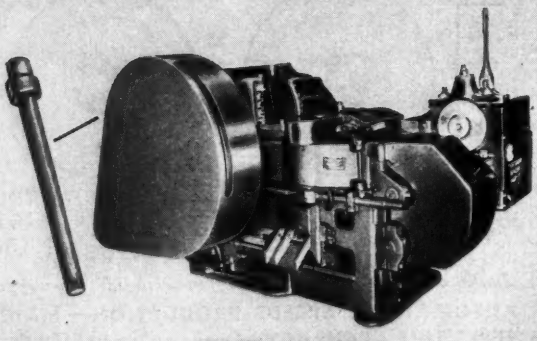


COLD NUT FORMER

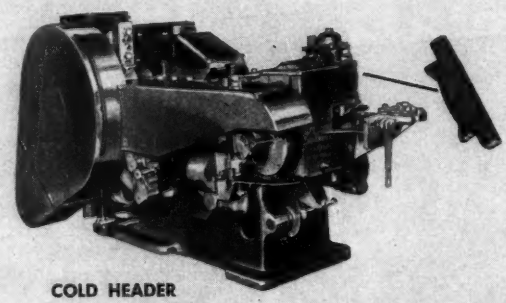
Our Job: HELPING YOU



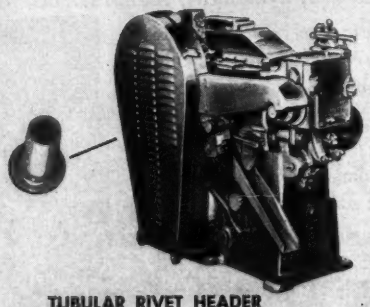
NAILMAKER



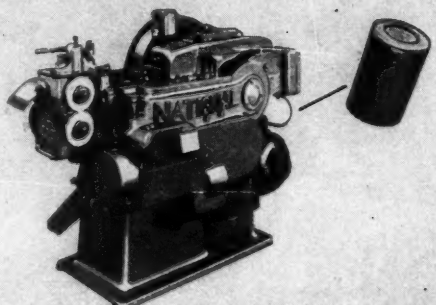
PROGRESSIVE HEADER



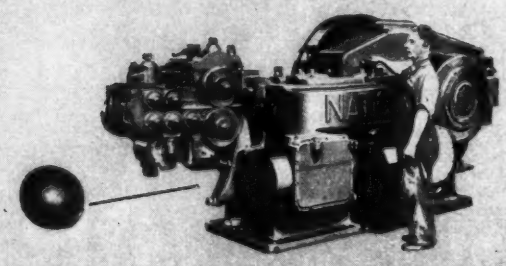
COLD HEADER



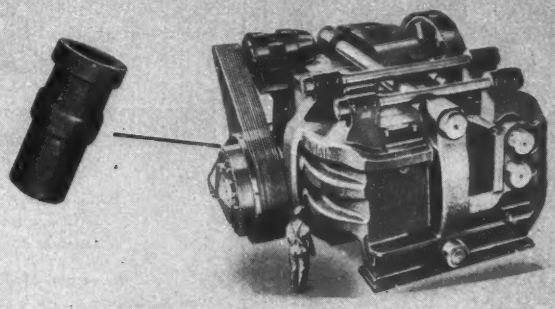
TUBULAR RIVET HEADER



ROLLER HEADER



BALL HEADER



FORGING MACHINE

"FLOW" METAL!

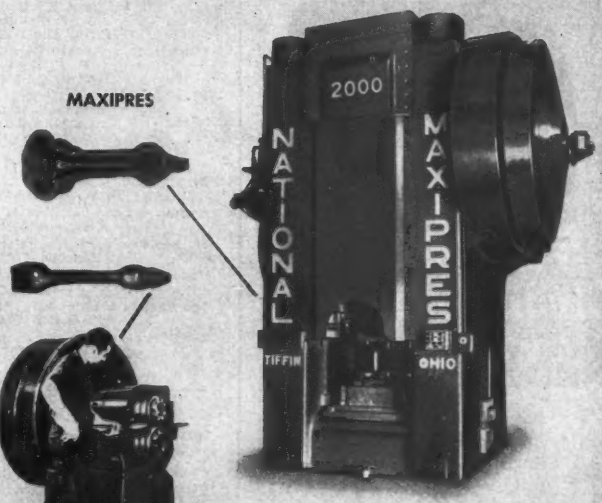
● Most people think of metal as an unyielding solid. To us it's fluid, even when cold. For 76 years our business has been the development of methods and machines which make metal *flow by pressure* into shapes required for the countless parts used in industry.

In peace and war, a growing share of the world's forgings, fasteners and other parts are being made on NATIONAL-built machines.

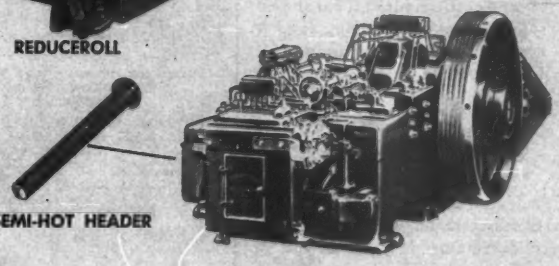
For example, large automobile crankshafts are finish-forged on a MAXIPRES weighing 1,600,000 pounds . . . five-penny nails stream from a NAILMAKER all day long 13 a second... ball-point pen balls, so small it takes 111,000 to make a pound, are made automatically from coiled wire on the smallest Cold Header.

NATIONAL'S all-around experience covers the full range of forging—hot and cold, large and small, ferrous and non-ferrous.

If you have a forging problem —hot or cold—or feel you might benefit by converting a certain part to a forging, why not have us take a look at it?



REDUCEROLL



SEMI-HOT HEADER

THIS DOOR IS ALWAYS OPEN

Send us a print or sample of your job. Better yet, pay us a visit. No obligation.

NATIONAL
MACHINERY COMPANY
TIFFIN, OHIO.

DESIGNERS AND BUILDERS OF MODERN FORGING MACHINES—MAXIPRESSES—COLD HEADERS—AND BOLT, NUT, RIVET, AND WIRE NAIL MACHINERY

Hartford Detroit Chicago

for fast economical metal cutting
STAR "Moly" high speed Power Blades

For over 70 years, industry has preferred STAR quality, preferred the blades made of carefully heat-treated, top-quality steel, fabricated on specially designed equipment—all for the sole purpose of delivering fast, economical metal cutting and long blade life.

FOR FAST, ECONOMICAL
Service

STAR Blades are sold only through recognized distributors. You get *fast* service from local distributors' inventories. You get *economical* service because your distributor knows your operations best, he is easy to reach, he is trained by qualified factory representatives to know the answers to your metal cutting—and hundreds of other—problems.

CLEMSON BROS., Inc.
MIDDLETOWN, N. Y., U.S.A.
Makers of Hand and Power Hack Saw Blades, Frames, Metal Cutting Band Saw Blades and Clemson Lawn Machines.

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Sharon

STAINLESS STEEL

SHARONSTEEL

SHARON STEEL CORPORATION

SHARON, PENNSYLVANIA

SHARON '430' STAINLESS IS IN GOOD SUPPLY AND IS AVAILABLE WITH FEW RESTRICTIONS

Sharon has prepared a fully illustrated booklet primarily for those who had been using one of the metals now in short supply. It is intended to introduce or reacquaint the reader with the possibilities of Type 430 Stainless Steel as a highly satisfactory primary or alternate material. The booklet contains basic fabrication information compiled to aid manufacturers in their consideration of this metal.

This booklet may contain the answers to your problems. Write for it today or contact the Sharon representative nearest you and ask him to see that you get your copy. Sharon district sales offices listed on back of next page for ready identification.

In today's economy Type 430 Stainless Steel is assuming an ever-increasing importance to producers of metal products. Government control over other metals has multiplied the difficulties of those fabricators who produce primarily for civilian consumption.

Sharon '430' Stainless is in good supply and available with few restrictions as to end use. It contains about 17 percent chromium with no nickel and has been the most popular ferritic grade of stainless steel. It comes the nearest to meeting the all-around requirements for general use. It was used before the chrome-nickel stainless steels and has a remarkable history of successful application. Absorption towers, used in the manufacture of nitric acid, made of this type in 1926 are still in service. In the automobile industry it has been especially popular. Large tonnages go into trim and window moldings where the material must meet demanding requirements, both in complex fabrication and in abusive service conditions.

Sharon '430' possesses good mechanical and physical properties and a ductility about three-fourths that of deep drawing quality carbon steel. Extra deep drawing requires more power, more clearance and more carefully selected lubricants than for ordinary steel. Intermediate annealing and pickling may be necessary.

Sharon straight chrome stainless may be

Major auto builders and leading architects have used Sharon '430' Stainless Steel Strip for years. The unretouched pictures here indicate the great durability of this material under the most grueling conditions. Both the roof drainage system and automotive trim have been in constant service for more than 10 years.

Illustrations from Sharon 430 Booklet

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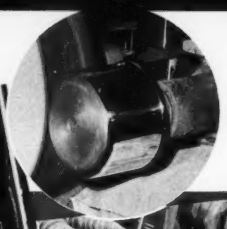
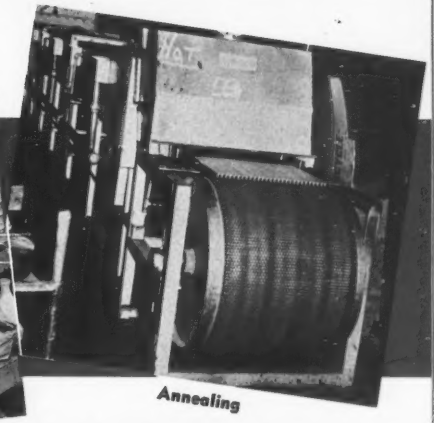
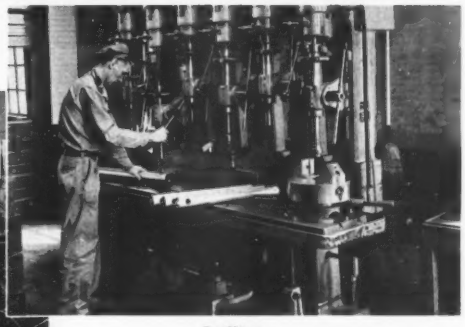


Polishing

Spinning

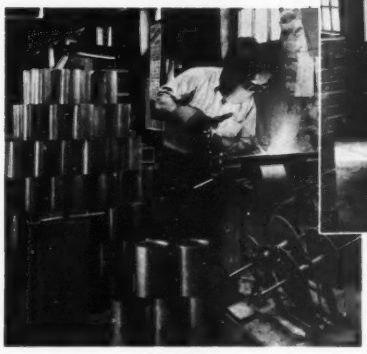


Annealing



Drilling

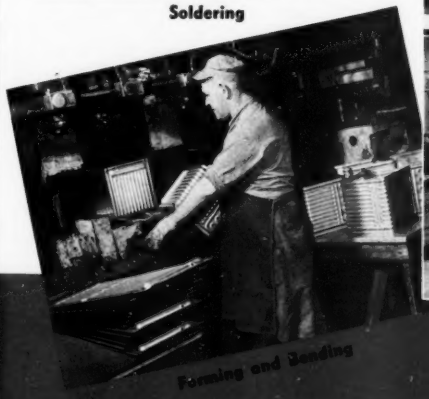
Soldering



Welding

Roll Forming

Cutting



Forming and Bending

welded for certain applications. Sharon also produces a titanium modified grade of 430 (430 Ti) which has superior bending qualities, is a better welding steel, and has superior corrosion resistance to that of regular 430.

A thin adherent scale is formed at temperatures as high as 1550°F. Formation of this protective scale, which does not crack away and reform, permits the use of Sharon '430' in intermittent heating operations.

Sharon '430' is suitable for a great many applications in products generally manufactured of other steels and metals. If the shortage of critical materials has threatened your production, consult with the Sharon office nearest you . . . '430' may be your answer.

TYPICAL APPLICATIONS *for Sharon 430 Stainless Steel . . .*

AUTOMOTIVE
- Grilles
- Horn rings
- Hub caps
- Mufflers
- Panels
- Trim
- Wheel rings
- Wheel covers
- Windshield wipers

CONSTRUCTION
- Decorative trim
- Down spouts
- Electrical hardware
- Flashings
- Gutters
- Kick plates
- Lighting
- Mouldings
- Roofing
- Screens
- Sheathing
- Spandrels
- Store fronts
- Tile and trim
- Window frames, channels and guides

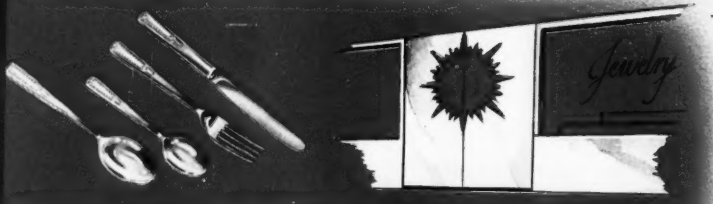
RAILROAD
- Diesel grilles
- Kick and push plates
- Refrigerator car parts
- Trim and decorative parts in passenger cars

HOUSEHOLD APPLIANCES
- Clothes driers
- Floor waxers and polishers
- Heating and cooking appliances
- Home and farm freezers
- Ironers and irons
- Lamps
- Ranges and stoves
- Refrigerators
- Refrigerator dishes
- Sewing machines
- Shavers, electric
- Toasters
- Vacuum cleaners
- Washing machines

KITCHEN
- Egg beaters
- Food serving trays
- Juicers
- Knives
- Mixers and mixing bowls and spoons
- Potato mashers
- Pots and pans
- Salt and condiment containers
- Spatulas

REFRIGERATION AND AIR-CONDITIONING
- Bottled beverage coolers
- Carbonated water systems
- Drinking fountains
- Fans
- Fountainettes
- Frozen food cabinets
- Ice cube makers
- Malt beverage dispensing system
- Refrigeration evaporators
- Refrigerator shelves and trim
- Room air conditioners
- Sandwich units
- Thermostats

GENERAL
- Ash trays
- Automatic vending machines
- Bar equipment
- Buttons and button parts
- Cheese slicers, commercial
- Cocktail shakers and accessories
- Cup holders
- Flatware
- Furniture
- Garden accessories
- Irons
- Jewelry
- Ladles
- Paint brush ferrules and rivets
- Radio and TV antennae
- Railings
- Refuse cans
- Rulers
- Soda fountains and equipment
- Utility cans
- Water pitchers and drinking cups
- Weather stripping



In these unsettled times you need all the information possible regarding materials and their use. Be sure to get your copy of this latest Sharon bulletin giving you up-to-the-minute information about Sharon '430' Stainless Steel. Contact one of the Sharon offices listed below or write direct and your copy will be in the return mail.

SHARON STEEL CORPORATION
GENERAL OFFICES — SHARON, PENNSYLVANIA

SALES OFFICES

CHICAGO 4, ILLINOIS
1822 McCormick Building
Phone: Harrison 7-2526

CINCINNATI 2, OHIO
2407-08 Carew Tower Bldg.
Phone: Main 1718

CLEVELAND 14, OHIO
1809 Union Commerce Building
Phone: Main 1-3135

DAYTON 2, OHIO
1801 Hulman Building
Phone: Fulton 5012

DETROIT 8, MICHIGAN
Tireman and Maple Avenue
Phone: Tiffany 6-1500

INDIANAPOLIS 4, IND.
425 Chamber of Commerce Building
Phone: Lincoln 7318

LOS ANGELES 13, CALIF.
524 South Spring Street
Phone: Mutual 5481

MILWAUKEE 2, WIS.
716 First Wisconsin National Bank Building
Phone: Broadway 2-7450

NEW YORK 18, N. Y.
500 Fifth Avenue
Phone: Pennsylvania 6-8744

PHILADELPHIA 3, PA.
1138 Broad St. Sta. Bldg.
Phone: Rittenhouse 6-0985

ROCHESTER 4, NEW YORK
503 Genesee Valley Trust Building
Phone: Baker 2580

SAN FRANCISCO 5, CALIF.
902 Monadnock Building
Phone: Garfield 4-6[illegible]

WASHINGTON 4, D. C.
Munsey Building
Phone: National 48[illegible]

CANADIAN REPRESENTATIVES

MONTREAL 3, QUEBEC
80 Prince Street
Phone: University 6-5761

TORONTO 17, ONTARIO
235 Wicksteed Avenue
Phone: Mayfair 0701

Litho in U.S.A.

NEW

Fast Arc Blowout

ALLIS-CHALMERS Mill Type 260 DC CONTACTOR

Two Type 260 DC Contactors, 150 amp, single pole, normally open, with auxiliary switch. One arc chute has been removed to show control detail. Type 260 DC Contactors with the new Arc Centering Feature are rated 600, 300 and 150 amps at 600-volt maximum.

- **Speeds Arc Interruption**
- **Extends Contact and Chute Life**

THIS NEW HEAVY DUTY CONTACTOR offers an *entirely new* principle of arc interruption . . . developed by Allis-Chalmers engineers to meet the exacting needs of industry.

Contact and arc chute life have been greatly extended by an *arc centering blowout*. In centering the arc, increased blowout action and fast interruption results from a combination of thermal convection and magnetic action. Contact erosion is reduced and carbonization is minimized.

Other advantages of the Mill Type 260 DC Contactor include: accessible construction for easy maintenance; ROLLING contact action with no destructive scuffing; design simplicity which has eliminated troublesome linkages, arms and pivots.

The Type 260 DC Contactor featuring the new arc interruption principle has been designed and built to steel mill engineers' specifications. Years of field and factory tests have proved this heavy duty contactor far exceeds NEMA requirements . . . have established it as an efficient, trouble-free performer under the most severe operating conditions. Call your nearby Allis-Chalmers District Office or write to Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 14B6505A.

A-3909

How Arc Interruption Principle Works

Arc Chute Assembly consists of triangular metal plates with U-shaped segments mounted alternately. Plates are insulated from each other and are placed at right angles to circumference of contact travel.

Metallic segments act as individual blowout coils.

Arc is forced upward along arc runner by blowout coil and impinges on metal segment of arc chute.

As contacts separate further, arc is stretched across an increased number of segments.

Arc rises quickly due to thermal and magnetic action of each individual metal segment.

ALLIS-CHALMERS

When You Really NEED SERVICE!

WHEN WATER WELLS and Pumps fail, slow up in production or need servicing, Layne stands ready to answer your call with the world's largest *inventory of parts and supplies, the greatest number of rigs, the biggest staff of crewmen—and more years of experience than any other organization in the country. Furthermore, if obsolete parts are required, Layne has fully capable engineers, machinists, foundrymen and factories for designing, casting and machining anything and everything needed for complete and efficient repairs. Layne service men know from actual experience just what can be done, and most important of all, exactly how to do it.

Advisedly, Layne keeps, safely filed, exact specifications and full details on all of their installations for instant use in both emergency and routine calls. If your water well or pump is not performing efficiently or is showing signs of possible failure, Layne will gladly make an inspection and give you a service job report. Address Layne & Bowler, General Offices, Memphis 8, Tenn.

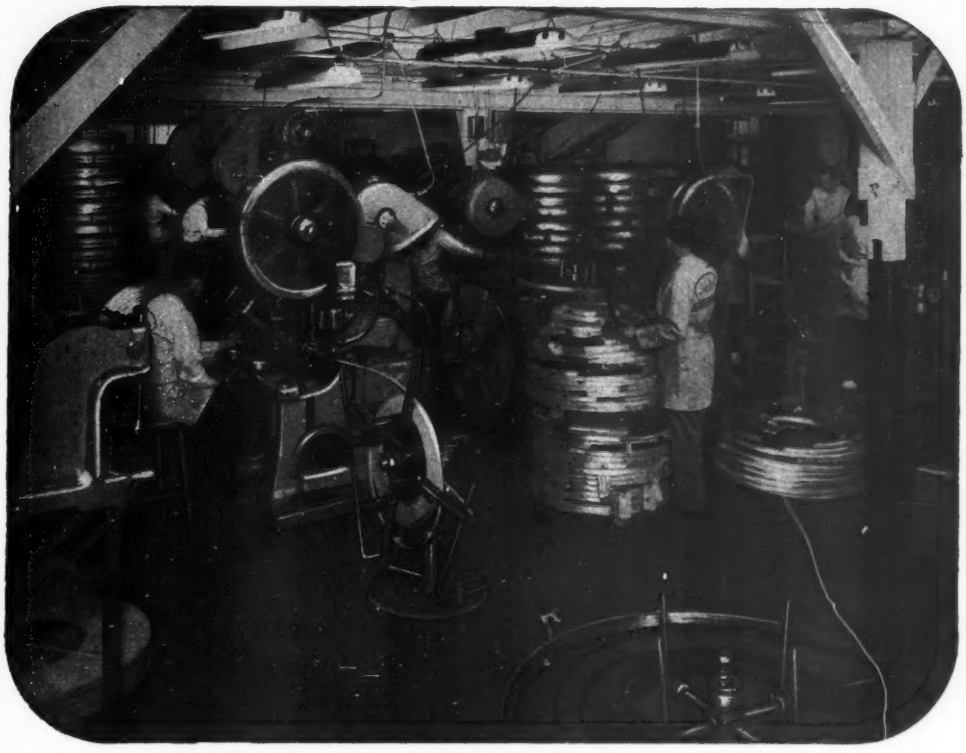
*(*for all makes of pumps)*

Layne

WATER WELLS

VERTICAL TURBINE PUMPS—WATER TREATMENT

FLAT SPRING STEEL



You can get it now! . . . and we believe it's the best spring steel we've ever made

OUR NEW specialty spring steel plant is in full swing. Equipped with today's most modern, precision machines, we believe we're producing flat spring steel that gives more for your money than ever before.

This new spring steel is tops in uniformity. It saves you preparation time . . . cuts down machine stoppages . . . gives you the greatest number of perfect parts from every foot and pound of steel.

With our greatly increased capacity we can make prompt deliveries on flat spring steel. And if you need high carbon round or shaped wire, ask what we can do. John A. Roebling's Sons Company, Trenton 2, N. J.

ROEBLING

ATLANTA, 954 AVON AVE • BOSTON, 51 SLEEPER ST • CHICAGO, 5525 W. ROOSEVELT RD • CINCINNATI, 5563 FREDONIA AVE • CLEVELAND, 19325 LAKEWOOD HEIGHTS BLVD. • DENVER, 4501 JACKSON ST • DETROIT, 915 FISHER BLDG • HOUSTON, 6216 NAVIGATION BLVD • LOS ANGELES, 5340 E. HARBOR ST • NEW YORK, 19 RECTOR ST • ODESSA, TEXAS, 1938 E. 2ND ST • PHILADELPHIA, 530 VINE ST • SAN FRANCISCO, 1740 17TH ST • SEATTLE, 900 1ST AVE S. • TULSA, 321 N. CHEYENNE ST • EXPORT SALES OFFICE, TRENTON 2, N. J.

New WATERBURY FARREL ROTOR VANE* FEED

IMPROVES THIS SCREW PRODUCTION PARADE

THE WATERBURY FARREL PATENTED
AUTOMATIC ROTOR VANE FEED THREADER
No. 10 size—125 blanks per minute
Other sizes available:
No. 20—100 blanks per minute
No. 0 —125 to 150 blanks per minute
No. 00—145 to 175 blanks per minute
Nº 10
WATERBURY

Waterbury Farrel's latest improvement in thread roller design, the patented Automatic Rotor Vane Feed, assures steadier production of threaded screws.

The new feeding arrangement delivers not only the normal range of blanks, but also shorter blanks, more efficiently than previous feeds, permitting increased production speeds.

OTHER WF DESIGN FEATURES

The chutes, the mechanism which transfers each blank from chutes to dies and the dies themselves are all in the same angular plane, eliminating any twisting or turning of blanks in process.

The cross transfer mechanism can be locked in its back position by a spring plunger, checking the feed to allow minor adjustments without stopping the machine.

The machine is built to accommodate maximum depth dies, making it possible to vary die capacity by use of filler plates.

Write for the complete story on this modern, high output, thread roller or on any other WF machine.

WATERBURY FARREL FOUNDRY & MACHINE CO.
WATERBURY 20, CONN.
Sales Offices: Chicago, Cleveland, Millburn, N. J.

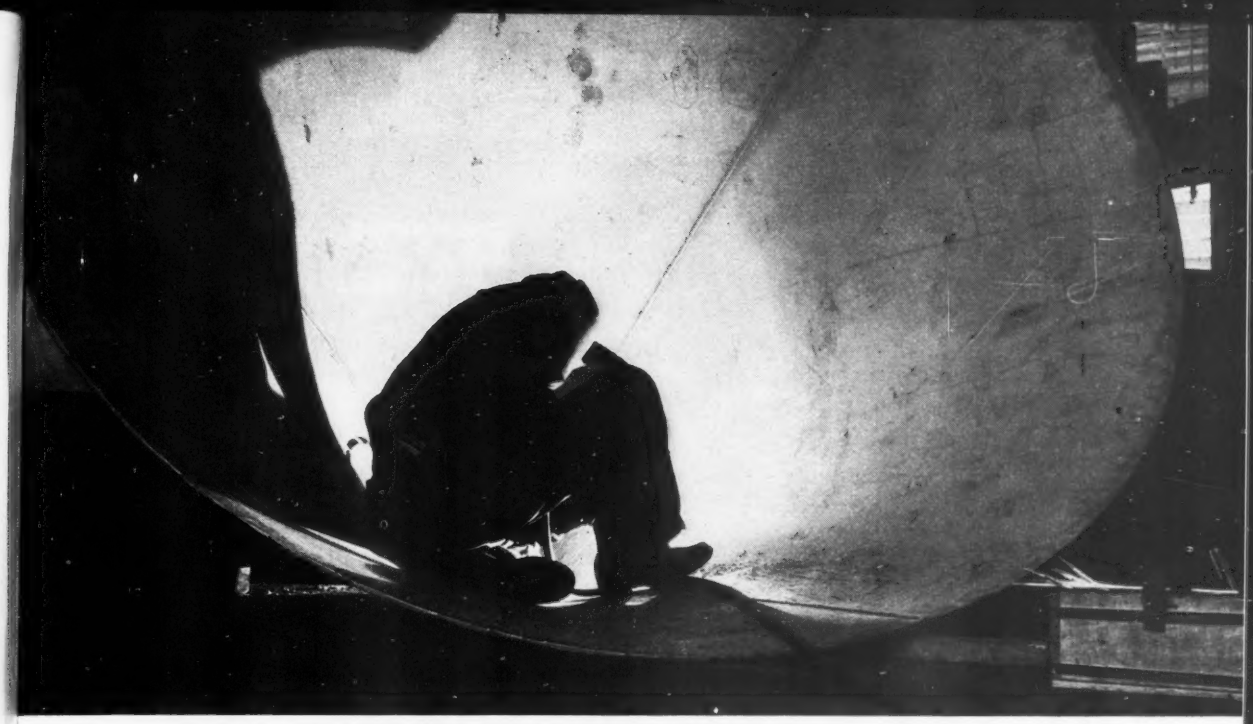
*Patented

A FEW OF THE MANY TYPES OF METAL WORKING MACHINERY MADE BY WATERBURY FARREL

COLD PROCESS BOLT AND NUT MACHINERY — Headers (all types) · Rivet Machinery · Trimmers · Thread Rolling Machines · Slotters · Nut Formers and Tappers, etc. POWER PRESSES — Crank, Cam and Toggle; also Rack and Pinion Presses · Eyelet Machines · Multiple Plunger Presses · Horizontal and Hydraulic Presses, etc. MILL MACHINERY — Rolling Mills: Strip, Rod, Wire Flattening (For Ferrous and Non Ferrous Metals) · Also Slitters · Straighteners · Cut-off Saws · Coilers · Winders, etc. WIRE MILL EQUIPMENT — Continuous Wire Drawing Machines (Upright Cone and Tandem) · Wire Flattening Mills · Chain Draw Benches · Pointers · Swagers · Bull Blocks · String-up Machines · Spoolers, etc.

FOUNDED WATERBURY FARREL 1851

WF-8



A STABLE ARC, GOOD DIRECTIONAL CONTROL, AND WIDE USEABILITY CHARACTERISTICS ENABLE YOU TO . . .

Weld Stainless Easily in ALL Positions with G-E Stainless Steel Electrodes

36 TYPES ASSURE YOU OF THE RIGHT ELECTRODE FOR EVERY JOB

You get the most for your dollar when you buy General Electric stainless steel electrodes. Here are seven reasons why:

1. You get excellent handling characteristics in *all positions.*
2. You get good directional control because G-E stainless steel electrodes give you a very stable arc.
3. You get the minimum of spatter and can remove slag easily.
4. You can select the correct electrode for every application because G.E. offers industry a complete line of chrome and chrome-nickel types.
5. You can get G-E stainless steel lime-coated electrodes for reverse polarity DC and titania-coated rods for AC and reverse polarity DC.
6. You get the correct metallurgical deposit your specific job requires.
7. You get excellent physical properties in the bead itself.

See Your G-E Welding Distributor!

He can help you select the best, most economical electrode for your specific stainless steel welding job.

Your G-E welding distributor also carries a complete line of other electrodes, accessories, AC, DC, Inert-Arc and Atomic Hydrogen welders. You can find his name by looking for General Electric under "Welding Equipment" in the classified pages of your telephone directory. ***General Electric Co., Schenectady 5, N. Y.***

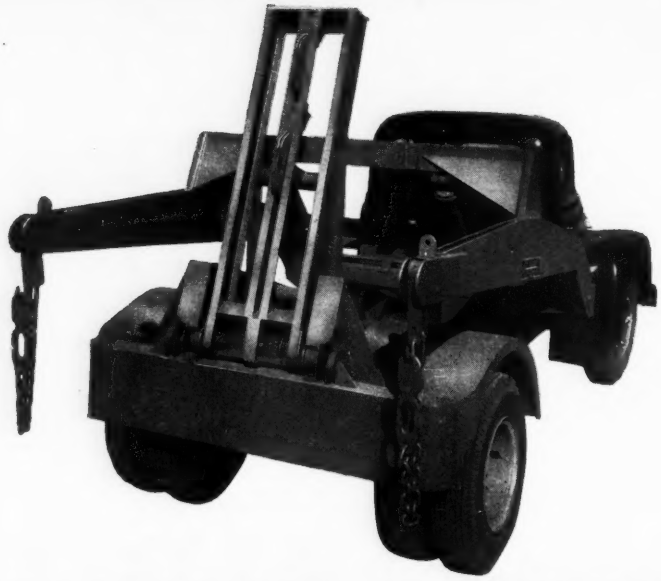
712-19

NEW! G-E Electrode Sliderule Comparator

Now it's easy to find the AWS classification and corresponding competitors' types of 23 G-E stainless steel electrodes and 36 regular electrodes. You can carry the G-E welding electrode Sliderule Comparator in your pocket, ready for reference at any time.

The electrode Sliderule is available *only* through your G-E Welding Distributor. Ask him for your free Comparator today!

GENERAL ELECTRIC

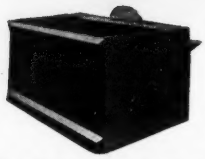


WHY USE 3 TO 5 TRUCKS... WHEN ONLY ONE WILL DO?

In many plants a Dempster-Dumpster, like the one above, operated by only one man, the driver, has replaced 3 to 5 conventional trucks and crews. The reason for this is that one truck-mounted Dempster-Dumpster serves scores of Dempster-Dumpster Detachable Containers up to four times the capacity of the average dump truck body. These containers are built in a wide variety of designs best suited to the type of materials handled—be they bulky, light or heavy . . . solids or liquids . . . trash or rubbish. Containers are conveniently located at accumulation points inside and outside buildings. To illustrate the flexibility of the Dempster-Dumpster System in handling all types of materials in your plant, we show, at right, a few of the dozens of Dempster-Dumpster Containers built to meet every bulk materials handling need. And remember, one truck-mounted Dempster-Dumpster handles all containers, regardless of capacity or design.

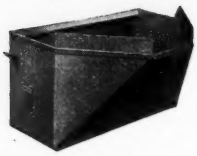
The Dempster-Dumpster System eliminates standing idle time of crews and trucks . . . eliminates re-handling of materials . . . increases efficiency, sanitation and good housekeeping . . . cuts cost of truck equipment and operation tremendously. Without question, it's the most efficient and lowest cost method of bulk materials handling by truck ever devised! The chances are this system will save you thousands of dollars annually. This equipment manufactured and sold exclusively by Dempster Brothers, Inc.

WHEN A CONTAINER IS FULL, the Dempster-Dumpster picks it up, hauls to destination and dumps the materials or sets load down intact. These three simple operations, shown above, are hydraulically controlled by driver in truck cab.

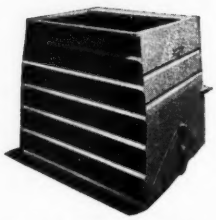


Drop Bottom Container built up to 10 cu. yd. capacity to handle heavy materials.

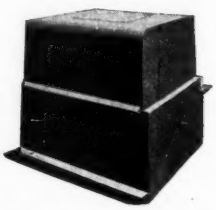
Tank Type Container meeting A.S.M.E. specifications. Capacities up to 1,200 gallons.



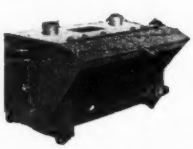
Tilt Type with Converged Lip for handling fine aggregate, wet or fluid materials.



Drop Bottom Pressed Steel Type for lighter service.



Universal Type built up to 12 cu. yd. capacity with top and end doors.



Five cu. yd. container with swivel casters for handling waste blast sand.

DEMPSTER BROTHERS, 6112 Dempster Bldg., Knoxville 17, Tenn.

NORGE ENGINEERS SAY...

STRESSPROOF® WORKS WHERE OTHER STEELS FAIL

STRESSPROOF was selected for this transmission pinion gear for the Norge washing machine—made by NORGE Division of Borg-Warner Corporation.

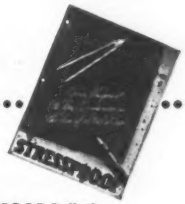
● This washing machine pinion must run for years without appreciable wear. After extensive field tests, Norge engineers found that STRESSPROOF works where other steels fail. Even heat-treated alloy, at double the cost per part, does not equal STRESSPROOF.

Then too, STRESSPROOF is used as machined. No heat treating means no distortion, with the consequent noisy operation of the washing machine. The pinions made of STRESSPROOF are clean and free of scale and require no clean-up work. They are ready for assembly as they come off the machines.

STRESSPROOF makes a better part at lower cost.

Wear resistance is only one of the four in-the-bar qualities that makes STRESSPROOF the choice for thousands of parts. *High strength*, double that of ordinary cold-finished shafting; *Machinability*, fully 50% better than heat-treated alloys of the same strength; and *Minimum warpage* in machining—are three other attributes of this unique steel.

SEND FOR Free Engineering Bulletin "New Economies in the Use of Steel Bars."



La Salle STEEL CO.

... the Most Complete Line of Carbon and Alloy Cold-Finished and Ground and Polished Bars in America.

La Salle Steel Co.
1414 150th Street
Hammond, Indiana

Please send me your STRESSPROOF Bulletin.

Name_____

Title_____

Company_____

Address_____

City_____ Zone ____ State_____

An Open Letter of Thanks to V.I.P.*

H. D. PAXSON, PRESIDENT
THEDA L. PAXSON SEC. - TREAS.

PHONE: 3486
P. O. Box 214

PAXSON MACHINE COMPANY
Engineers and Builders of
COLD-ROLLED, STRIP-MILL EQUIPMENT
Specializing in Slitting Lines
SALEM, OHIO

Users of Paxson Equipment
Coast to Coast
U. S. A.

Dear Customers:

Thanks to you, *VERY IMPORTANT PEOPLE, for giving us the users' point of view in developing Paxson Slitting Equipment.

You, the actual users, are the ones who really engineered and designed Paxson Slitting Lines.

The combined knowledge, ideas and suggestions of slitting men in plants large and small have guided us in developing custom built lines that best meet your specific needs.

For the utmost in modern efficiency and economical operations, users rely on us for both general and heavy duty lines.

Now, more than ever, it truly can be said:
"PAXSON GIVES YOU THE EDGE".

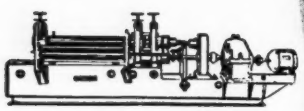
Appreciatively yours,

PAXSON MACHINE COMPANY

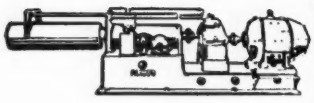
H. D. Paxson, President

HDP/t

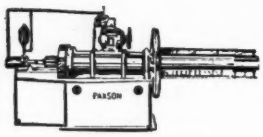
"PAXSON GIVES YOU THE EDGE"
REG. T. M.



SLITTERS



COILERS



PAY-OFF REELS

Do You Fly?
2800 ft. E.W. runway and club house, private field 2 miles west of Salem, maintained for your convenience. Wire or phone arrival time. We will meet your plane.

PAXSON MACHINE CO.
SALEM • OHIO

Engineers and Builders of Cold-Rolled Strip-Mill Equipment SPECIALIZING IN SLITTING LINES

REMEMBER, ALL PAXSON LINES ARE CUSTOM BUILT

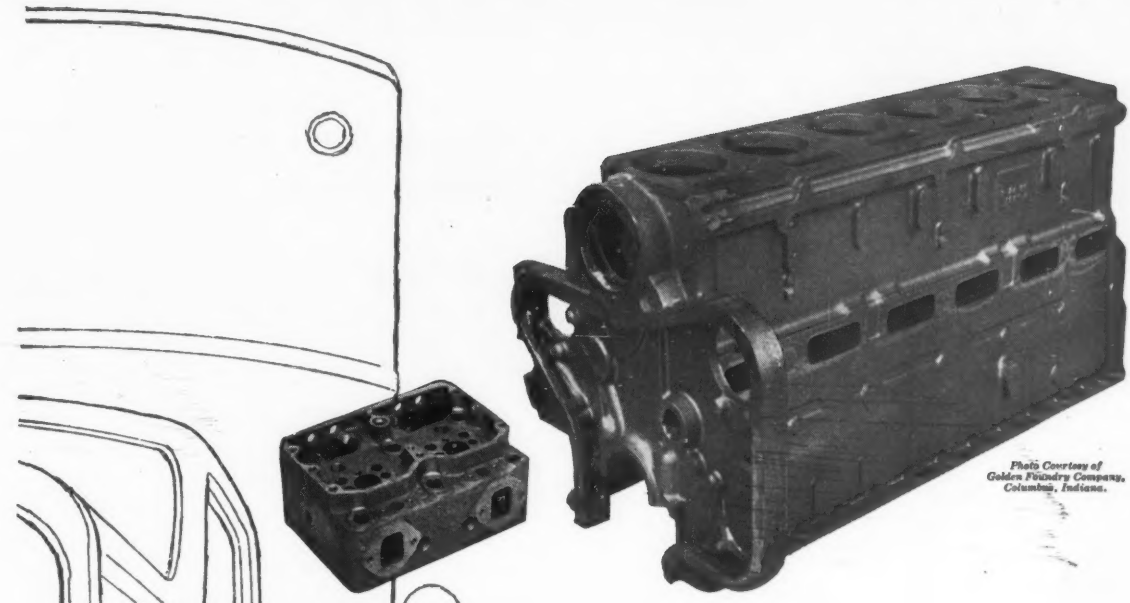


Photo Courtesy of Golden Foundry Company, Columbus, Indiana.

Cummins builds them rugged...

with mighty rigid "Specs"

For rugged dependability, many of the nation's leading truck lines will agree, you can't beat a Cummins Diesel engine. A good reason for that reputation can be found in the rigid requirements for all component engine parts—including the block and cylinder head castings shown above.

To meet these strict requirements, the foundry which furnishes the castings has long made it a point to use only the finest pig iron—including Republic CHATEAUGAY. And the result: *Uniform high strength and machinability throughout every casting,* despite intricate passages and adjoining light and heavy sections.

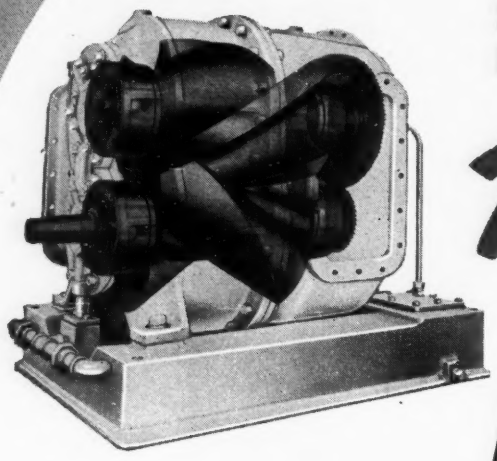
A Republic Pig Iron Metallurgist will be glad to give you the complete facts about CHATEAUGAY Pig Iron. Write, wire or phone:

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.

Republic PIG IRON

"CHATEAUGAY"	"REPUBLIC"	"PIONEER"
Low-Phosphorus, Copper-Free	(Northern) Foundry, Basic and Malleable	(Southern) Foundry and Basic

REPUBLIC STEEL



STANDARDAIRE BLOWER DESIGN

Plus

SKF BEARING ENGINEERING

Every so often, a manufacturer has a chance to *prove* his wisdom in the selection of the product components he specifies.

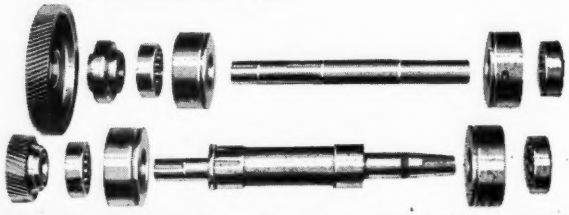
For example, Read Standard Corporation was able to obtain performance data on one of their "Standardaire" Blowers which had operated 24 hours a day, for 15 months, at 2200 rpm.

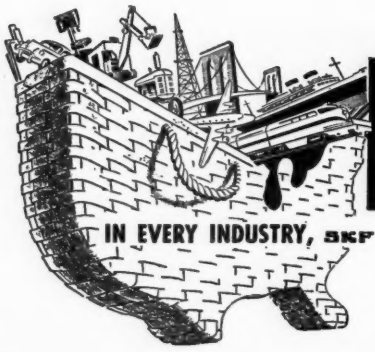
In other figures, that's about one and a half billion revolutions—representing many years' service for typical blower installations.

Even after the hard, difficult service, this blower and bearings were found to be in excellent condition when dismantled and inspected in the presence of Read Standard customer's representative.

Performance like this is proof of sound ***design***—proof, too, that the designers selected the best available materials and component parts . . . among these were SKF Bearings.

Here we quote from the "Standardaire" Blower performance report: "Anti-friction bearings in good condition." They were SKF Cylindrical, and Spherical Roller Bearings, designed into the gate rotor shaft and main rotor shaft as shown in the illustration.





SKF®
BALL AND ROLLER BEARINGS

IN EVERY INDUSTRY, SKF Puts The Right Bearing In The Right Place

Remember—if you want design assistance and engineering help when you're laying-in bearings, you can get it from SKF field or home office men who know the best ways to do the job in *every* industry. **SKF INDUSTRIES, INC.,** PHILADELPHIA 32, PA.—*manufacturers of* **SKF** *and* HESS-BRIGHT *bearings.*

7323

Who moved Ruth?

You did, for one. And there are a hundred million others just like you.

It's tough to have to move a 50-year-old town. But there's a lot of copper under Ruth, Nevada. And popular demand for copper and Brass alloys is increasing so sharply that Ruth is moving soon to the modern town of New Ruth, now abuilding.

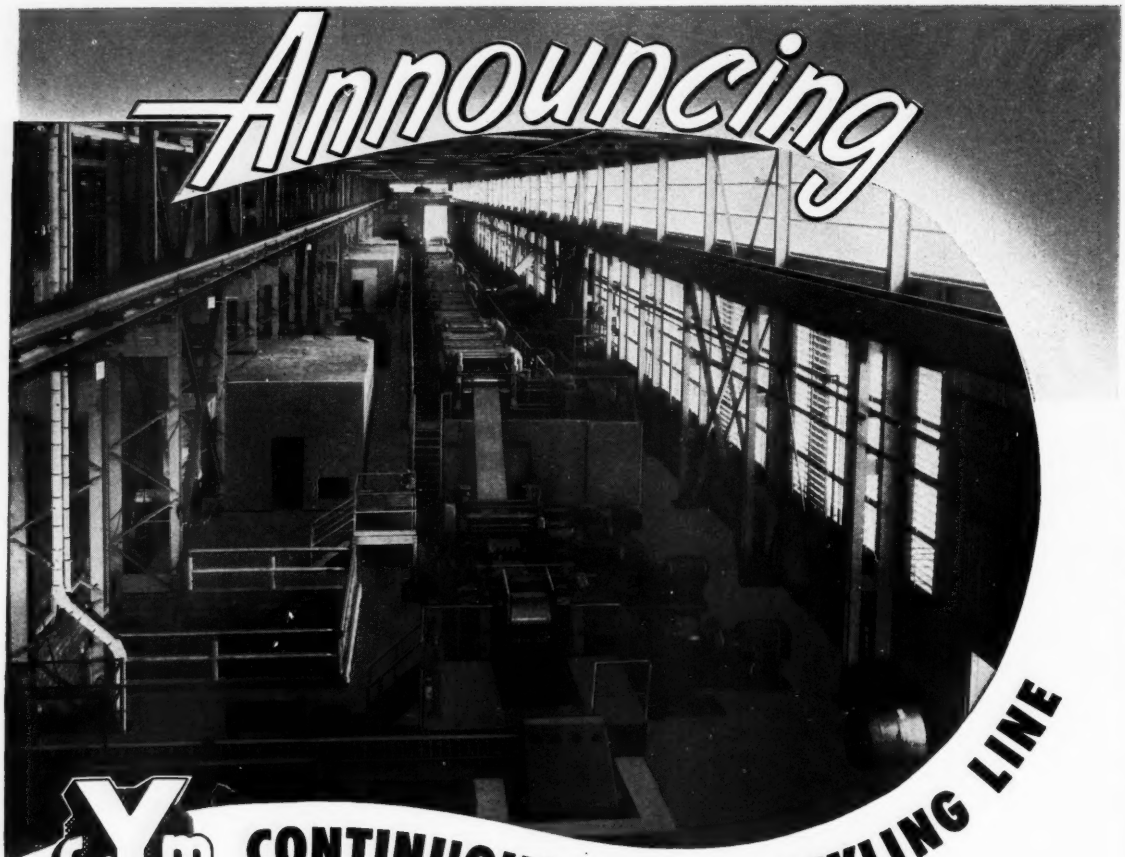
Yes, the demand for Brass is never so urgent as it is right after a period of shortages. For then it's common knowledge, right fresh out of recent personal experience, *that there are no substitutes for Brass.* From plumbing fixtures to TV parts, every industry knows that there are countless applications in which there's nothing like Brass for workability, saleability . . . and serviceability which makes the golden-yellow metal the lowest-cost material in the long run, on job after job.

Now if you want Brass sheet, rod and wire that's made as you want it and delivered when you need it . . . *then buy Bristol Brass* . . . which is now rolling out of these modern mills faster than it ever did before.

• • •

The BRISTOL BRASS CORPORATION, makers of Brass since 1850 in Bristol, Conn. Offices or warehouses in Boston, Chicago, Cleveland, Dayton, Detroit, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Providence, Rochester.

"Bristol-Fashion" means **Brass at its Best**



Announcing

F&Y CONTINUOUS STRIP PICKLING LINE

NEW • EFFICIENT • ECONOMICAL

Complete line equipment with latest improved operating features. Maximum volume production with minimum floor space requirements.

If you are interested in a new installation or improving your present equipment why not investigate the Youngstown Line!

these features

- ☐ Coil Box with Strip Opener.
- ☐ Triple Processor with Roller Leveller.
- ☐ Flash Welding and Mechanical Stitching.
- ☐ Single Cycle Up-Cut Shears.
- ☐ Heavy Duty Rubber Covered, Brick Lined Steel Tanks.
- ☐ Magnetic Loop Control for Acid Tanks.
- ☐ Fume Exhaust System—Roto Clone Scrubber.
- ☐ Automatic Control System for Temperature and Acid Proportioning.
- ☐ Side Trimmer with Scrap Cutting or Balling.
- ☐ Up-Coiler with Strip Oiling System.
- ☐ Entry and Exit Coil Conveyors.

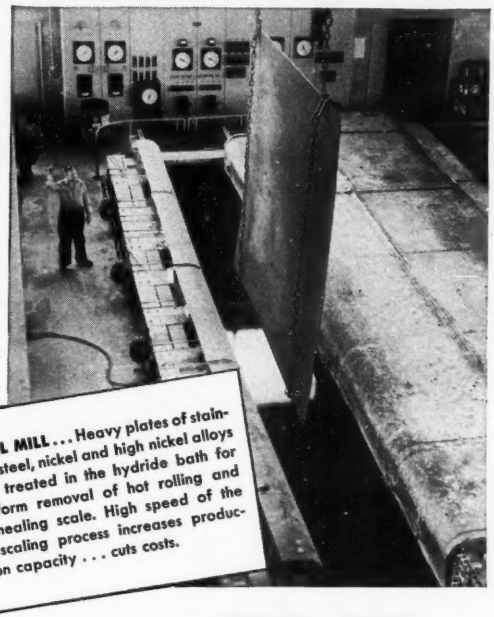
The Youngstown Foundry & Machine Co. F&Y

OVER SIXTY YEARS OF SERVICE TO THE STEEL INDUSTRY

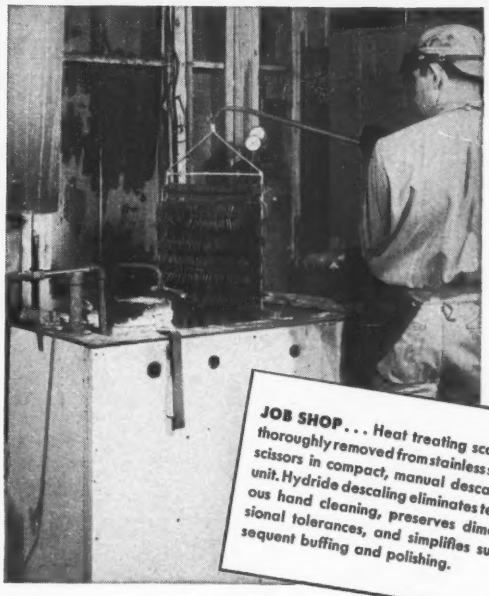
Youngstown, Ohio

9

NO SECTION TOO BIG . . . NO PART TOO SMALL



STEEL MILL . . . Heavy plates of stainless steel, nickel and high nickel alloys are treated in the hydride bath for uniform removal of hot rolling and annealing scale. High speed of the descaling process increases production capacity . . . cuts costs.



JOB SHOP . . . Heat treating scale is thoroughly removed from stainless steel scissors in compact, manual descaling unit. Hydride descaling eliminates tedious hand cleaning, preserves dimensional tolerances, and simplifies subsequent buffing and polishing.

FOR THE
DU PONT SODIUM HYDRIDE DESCALING PROCESS

FROM OUNCES TO TONS! That's the capacity range of current sodium hydride installations in mills, factories and job shops of all sizes. And with each unit, the same results—speedy, uniform descaling of many different metals at a saving in time and material. Hydride descaling leaves surfaces clean and bright . . . does not attack base metal. Yet, scale is thoroughly removed from even the most intricate part by the penetrating bath action.

FOR MORE INFORMATION about the Du Pont Sodium Hydride Descaling Process, just get in touch with our nearest district or sales office or send the coupon below to: E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

DISTRICT AND SALES OFFICES:

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*Barada & Page, Inc.

OUTSTANDING ADVANTAGES OF THE SODIUM HYDRIDE PROCESS

- **HIGH-SPEED OPERATION**—Descales in shortest practicable time cycle . . . can be adapted to manual, conveyorized or continuous operation.
- **NO LOSS OF BASE METAL**—Bath action is reducing. Reaction stops when oxygen is removed from scale, eliminates pickling losses, etching and pitting.
- **ECONOMICAL TO OPERATE**—Permits savings in acid and metal . . . handles large volume of work in small space . . . is non-electrolytic.
- **HANDLES DIFFERENT METALS**—Alloy steel, stainless steel, nickel, copper, titanium and cobalt bearing alloys can be efficiently descaled—even in the same bath.
- **UNIFORM DESCALING**—On all surfaces without need for special racking procedures.
- **USES LOW-COST EQUIPMENT**—(Carbon Steel Tanks). NO HYDROGEN EMBRITTLEMENT.

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Department
Wilmington 98, Delaware

Please send me more information on the Du Pont Hydride Descaling Process: advantages, applications, equipment used. I am interested in cleaning_____products.

*Name*_____ *Position*_____

*Firm*_____

*Street and No.*_____

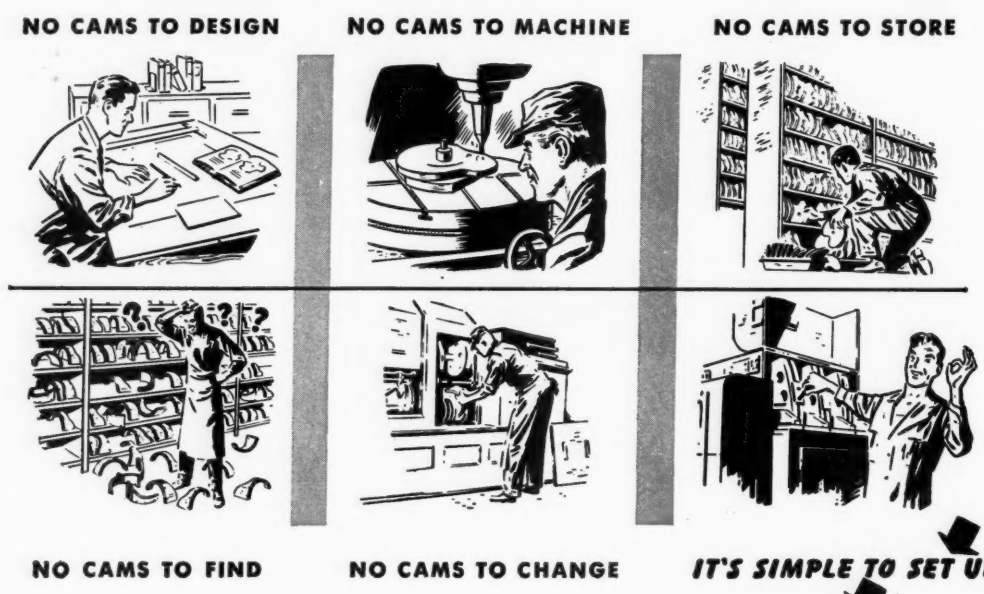
*City*_____ *State*_____

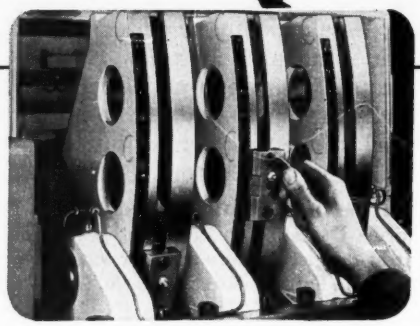
DU PONT
Sodium hydride process for positive descaling

DU PONT 150th Anniversary

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

No cam worries with a Warner & Swasey 5-Spindle Automatic

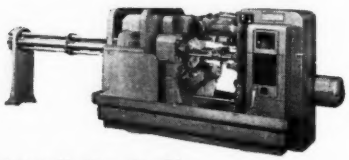




Patented "Quick-Set" Quadrants cut set-up time, quickly adjust to any feed stroke between 0 and 5 inches.

JUST make a simple setting and there you have your new feed stroke, clearly indicated on a graduated scale. Yes, it's as easy as that! All feed strokes are quickly available for both longitudinal and cross slides. No more need to sacrifice cycle time because the "right" cam is not on hand or because a cam change would take too long. You always get your exact feed stroke quickly on the Warner & Swasey 5-Spindle Automatic.

WARNER & SWASEY
Cleveland



5-Spindle Bar Machines
—1¾" Standard Capacity
—2¼" Oversize Capacity
5-Spindle Chucking Machine—6" Swing

YOU CAN MACHINE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY TURRET LATHES, AUTOMATICS, AND TAPPING MACHINES

. . . when you need a Compact Drive

. . . look for the Fairbanks-Morse Seal. On slow-speed applications, for example, you'll find the unique F-M Motorgear that combines reduction gears with the 40%-Shorter Axial Air Gap Motor to make a complete slow-speed unit—*more compact than the average motor alone!*

Whatever the drive problem on your equipment, the Fairbanks-Morse Seal is your assurance of top performance, minimized servicing . . . symmetrical design that improves appearance of the driven unit.

When you look for motors—one or a thousand . . . for standard or unusual applications—*always* look for the Fairbanks-Morse Seal. For over 120 years that seal has stood for the finest in manufacturing integrity to *all* industry. Fairbanks, Morse & Co., Chicago 5, Ill.

FAIRBANKS-MORSE

a name worth remembering when you want the best

ELECTRIC MOTORS AND GENERATORS • DIESEL LOCOMOTIVES AND ENGINES • PUMPS
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Aeroquip

REG. TRADE MARK

BRANCHING OUT!

The seed was planted only 12 years ago but the idea grew and grew. Now Aeroquip products serve dozens of major industries with a multitude of applications.

Originally, Aeroquip produced Flexible Hose Lines and Self-Sealing Couplings for military aircraft only. Successive developments, which actually set the pace for military standards, led to Aeroquip's present position of dominance in the fields of commercial as well as military aircraft.

The development of allied industrial products presented vast new opportunities. The "Aeroquip Idea"—bulk hose that can be cut to length and detachable, reusable fittings which can be easily assembled by hand—flourished among manufacturers and users of all types of industrial equipment. Even the farmer is counted among Aeroquip's customers.

Today, Aeroquip produces and sells more hose lines for industrial and aircraft applications than any other manufacturer.

AEROQUIP CORPORATION, JACKSON, MICHIGAN

SALES OFFICES: BURBANK, CALIF. • DAYTON, OHIO • HAGERSTOWN, MD. • HIGH POINT, N. C. • MIAMI SPRINGS, FLA.
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DoALL
BAND MACHINES
BAND TOOLS
GAGE BLOCKS
SURFACE GRINDERS
PRODUCTION NEWS
SAW BANDS • GAGING EQUIPMENT • TOOL STEEL • CUTTING TOOLS • INDUSTRIAL SUPPLIES

Vol. 1 Published by The DoALL Company, 254 N. Laurel Ave., Des Plaines, Illinois No. 9

Production Upped 100%—Tool Life Increased 75 Per Cent by DoAll Band Machining Methods

Contour Cutting, Friction Sawing Save Man Hours and Materials

The Surface Combustion Corporation of Columbus, Ohio, manufacturers of "Janitrol" heating equipment find that DoALL Band Machining is the fastest, easiest method of cutting stainless steel rounds, tubing and certain stainless steel heater parts.

The DoALL Zephyr Band Machine is used to cut away one side of circular, aircraft heater spinnings—leaving a narrow strip intact along one edge. Formerly a power band saw was used on this operation to cut away the entire side of the spinning. A narrow strip then had to be cut from the waste material and welded back to the edge of the spinning.

Showing section removed from aircraft heater spinning by simple band machining technique.

R. M. Huntsberger, engineer at the Columbus plant, reports that by eliminating unnecessary steps in the above operation, DoALL Band Machining has increased production 100% over the method previously used. Saw blade life is 75% greater, man hours have reduced 8 per day at a savings of $16.24, and material savings amount to 5¢ on each spinning turned out. In addition, fabrication of the parts is more accurate with less operator fatigue.

In a straight cut-off job at the Surface Combustion Corporation where a power hack saw was formerly used, the DoALL Zephyr Band Machine with a DoALL saw band for friction sawing, has reduced cutting time on 2¼-inch stainless steel rounds from five minutes to sixteen seconds per round—time savings of almost 475 percent.

Versatile DoALL Band Machining methods have a place in every industry for maintenance or production work. DoALL Contour Sawing is the fastest known method for machining to shape all metals, glass, wood, cloth, leather, rubber, paper, plastics and other materials. Contour cutting makes it easy for the operator to follow any layout

Cutting section from aircraft heater spinning with DoALL Zephyr band machine.

line—cut where he wants to cut at great speeds with a saving in time, material and labor. The endless band tools slice cleanly and evenly through the material, cutting all the time, all the way.

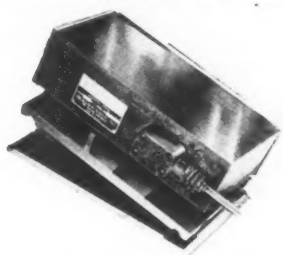
Literature and information is available upon request.

Electro-Magnetic Sine Chuck Increases Grinder Productivity

Faster Set-ups For Angular Grinding: Greater Accuracy

Using an electro-magnetic sine chuck, angular set-ups on any surface grinder can now be made precisely and easily. Whether the job calls for single or compound angles, the set-up can be made in a matter of minutes instead of hours with this precision holding tool.

On any type of surface grinding, the powerful electro-magnetic sine chuck holds the work securely throughout the operation. There is no distortion and no warpage of the work piece. There are no dials—no scales for calibration. Standard gage blocks insure



Electro-magnetic sine chuck available for DoALL surface grinders.

accuracy which is unattainable by any other means. This new attachment is simplicity itself. The only moving part is a simple, rugged precision bearing. The electro-magnetic sine chuck is available through all local DoALL Service Stores. Further information on request.

New Rachet Feed Saves Work Time, Blade Life

A combination ratchet level feed and adjustable work holding jaw for straight or contour bandsawing affords maximum cutting rates with longer band tool life. There is no guesswork as to how much feeding pressure is being applied. The level arrangement allows the operator to actually "feel" the cutting action of the band and maintain maximum cutting rates without overloading.

The simplicity of the design, setup and operation of the attachment eliminates high initial cost and maintenance encountered with hydraulic or motor driven types. Literature available on request.

———See Next Page———→

NEW!

DoALL MICRO-STEP GAGING SYSTEM

HERE, for the first time is the means for directly applying gage blocks to thousands of precision measurement jobs which previously could be checked only with less accurate gaging setups.

—the means for securing micro-inch accuracy on *inside* as well as outside measurements.

—the means for assembling *gage-block* gages of every conceivable type, including gages up to 72" long.

—the means for making pin gages, snap gages, indicating gages, height gages, depth gages, go and no-go gages for use not only in the lab, but in the toolroom and shop as well.

Here, in short, is a practical, economical means of securing superior dimensional quality control, of reducing rejects and wasted time, material and money.

Key to the system are the new DoALL Gage Holders and gage block-accurate End Standards with full exposed measuring surfaces. No other gage system offers such a combination.

For complete details, call your local DoALL Sales-Service Store, or write:

THE DoALL COMPANY

254 N. Laurel Ave., Des Plaines, Illinois

DoALL

ASK FOR NEW CATALOG

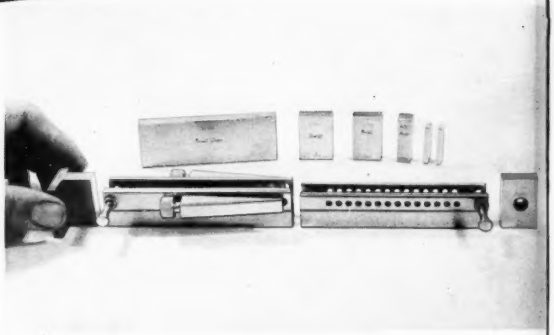
New Catalog describes the DoALL Micro-Step Gaging System in detail, lists all gage block, end standard and holder sets. Free on request.

WITH THESE COMPONENTS . . .

DoALL BLOCKS

Accuracy second to none in the world. Most complete line of sets available, 6 to 118 pieces, including a new set having gage blocks up to 20.000" long.

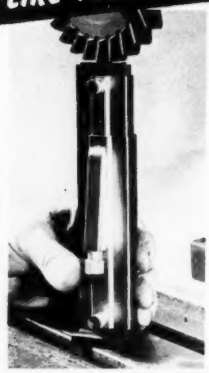
QUICKLY ASSEMBLED LIKE THIS . . .



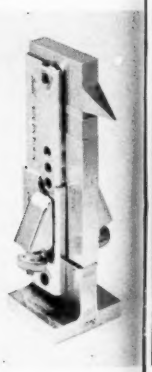
1. Select the holder, end standards and gage block combination for any gage you need.

YOU MAKE GAGES LIKE THESE . . .

Internal gage-block gage calibrating indicating snap gage.

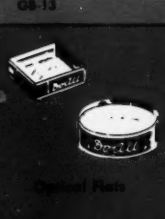


Assembled height gage for checking milling cutter setting.



Height gage with scriber end standard for layout work.

GB-13



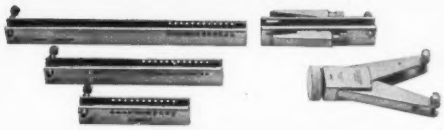
Optical Flats

Vernier Gage Blocks

Step Bars and Blocks

NEW DoALL END STANDARDS

Here are gage block-accurate End Standards with fully exposed measuring surfaces which, when used with DoALL Gage Holders, make possible *gage-block* gages for every internal or external measuring job.

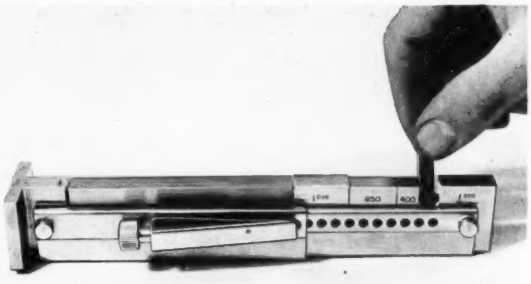


NEW DoALL GAGE HOLDERS

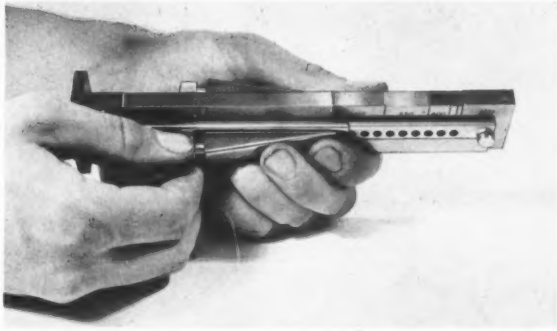
Channel-type holders available for making gages from 2″ to 72″ length. Quickly, easily assembled. Also a caliper holder for gages up to 6″. For use only with DoALL End Standards and standard rectangular gage blocks.

NEW DoALL DIAL INDICATOR ASSEMBLIES

Here is the means of mounting dial indicators in any desired position in a DoALL Gage Holder to make indicating gages of all kinds.

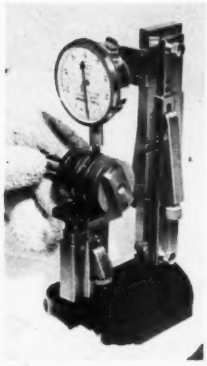


2. Assemble holder, snap detent pins through end standards and insert correct gage block combination.



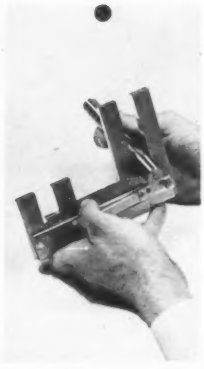
3. Press clamps into channel holes and tighten thumb screws snugly. That is all there is to it.

Internal indicating pin gage checking parts in the shop.



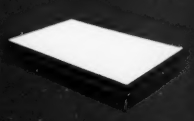
Pre-calibrated indicating comparator made with DoALL parts.

Micro-inch accurate indicating snap gage in use in the shop.



Go and no-go gage assembled with Micro-Step components.

This millionths-accurate indicating height gage is six feet long!



Silver King Reports New Claw Tooth Band Cuts Faster Gives "100%" Better Finish

Greatly Increases Output Cutting Center Hole Hub Area and Trimming Hard Aluminum Castings

For cutting the center hole, hub area, and trimming hard aluminum sand castings where straightness and finish of cut are critical, the Silver King Corporation, Aurora, Illinois, swears by the new DoALL Claw Tooth saw band.

Using the Claw Tooth Band, production has been stepped up with a 400% increase in blade life—125-150 work pieces are now machined per thousand feet of blade. The finish is straight, flat and "100%" better. The saw band previously used for these operations produced only 35-40 pieces per thousand feet of blade. The finish was poor; the feeding slow and hard.

The DoALL Claw Tooth saw band has an extremely hard edge, flexible back, and teeth of positive rake angle. Claw Tooth Bands cut metals, woods, and plastics remarkably fast because the positive rake gives freer cutting with less feed pressure. The clawlike teeth literally pull themselves into the material being cut.

Because of the extreme hardness developed in the new toothing technique, claw teeth retain their cutting edges and set far longer than hardened teeth ordinarily do. As a result, it costs substantially less to use fast-cutting claw tooth bands.

New DoALL Claw Tooth saw bands are available only from stocks of local DoALL stores. Complete information and literature supplied on request.

DoALL Claw Tooth bands are packaged in exclusive strip-out container.

Usage Bears Out DoALL Ground Flat Stock "Controlled Quality"

Usage proves that DoALL Ground Flat Stock is not just an ordinary tool steel—some of it good and some of it bad. Usage proves that "Controlled Quality" DoALL Ground Flat Stock is an oil hardening tool steel that never varies from the high standards set for it.

Exacting controls from electric furnace to packaged piece guarantees correct analysis—fast, easy machinability—accurate dimension—uniform hardening—freedom from surface defects and decarburization.

Usage bears out that "Controlled Quality" DoALL Ground Flat Stock actually means longer wearing tools, parts and dies for industry—saves time and money on every job.

238 sizes are carried in stock by local DoALL stores. Size and price charts are available on request.

For further information, call or write your nearest DoALL Sales Store.

CALL DoALL locally at these Sales-Service Stores

ATLANTA, GA.
304 Decatur St., S.E.
Call DoALL: Walnut 5384

BALTIMORE 12, MD.
5621 York Rd.
Call DoALL: Hopkins 5340

BIRMINGHAM 4, ALA.
800 N. 24th St.
Call DoALL: Birmingham 3-0502

BROOKLINE 46, MASS.
89 Washington St.
Call DoALL: Longwood 6-9555

BUFFALO 23, N. Y.
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Call DoALL: Riverside 3424

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Call DoALL: Cedar Rapids 3-0616

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6517 Euclid Ave.
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DAYTON, OHIO
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DENVER 4, COLO.
1187 Stout St.
Call DoALL: Alpine 7444

DETROIT 27, MICH.
15010 Plymouth Rd.
Call DoALL: Broadway 3-4141

GRAND RAPIDS 7, MICH.
410 Hall St., S.E.
Call DoALL: 5-2191

HARTFORD 5, CONN.
45 Farmington Ave.
Call DoALL: Hartford 5-6664

HOUSTON 2, TEXAS
121 St. Emanuel
Call DoALL: Capital 6588

INDIANAPOLIS 2, IND.
1401-3 N. Illinois St.
Call DoALL: Plaza 6496

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1106 Kings Ave.
Call DoALL: Jacksonville 9-7087

KANSAS CITY 6, MO.
1019 E. Truman Rd.
Call DoALL: Harrison 5857

LOS ANGELES 21, CALIF.
1316-18 S. Santa Fe
Call DoALL: Trinity 3871

MILWAUKEE 5, WIS.
2427 W. North Ave.
Call DoALL: Division 2-2950

MINNEAPOLIS 14, MINN.
1328 S. Fourth St.
Call DoALL: Atlantic 4341
St. Paul—dial red "O" for Zenith 2399

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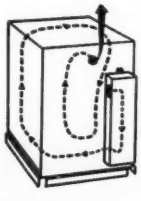

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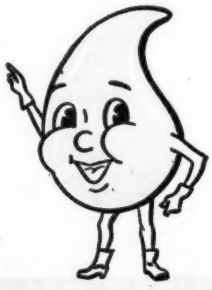

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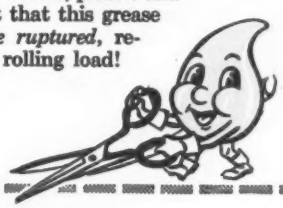

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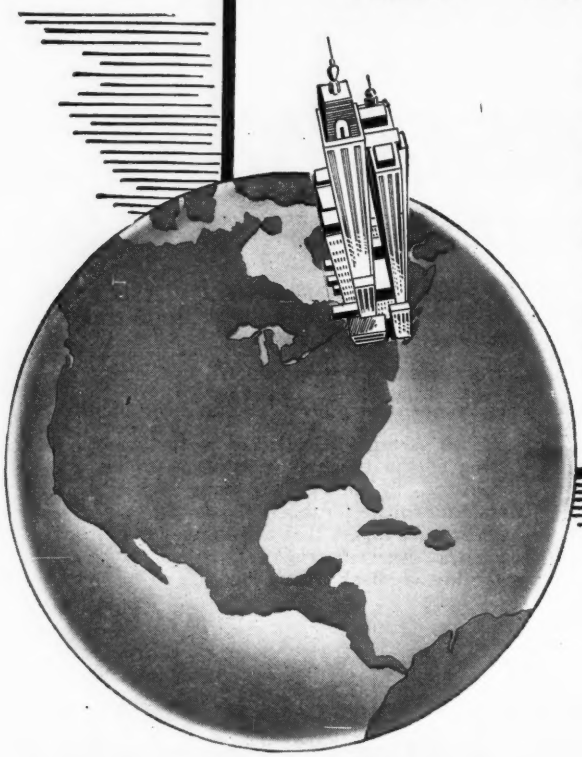

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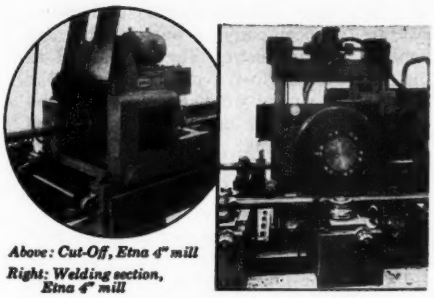

Above: Cut-Off, Etna 4" mill
Right: Welding section, Etna 4" mill

Etna's background of experience in the manufacture of heavy-duty tube mills is your assurance of precision productivity of steel pipe in your plant. Etna mills are designed specifically to solve *your individual requirements.* And for excellent service, there is a qualified Etna Dealer nearby, who is anxious to serve you. Let us discuss with you, the many advantages of Etna Mills in your plant . . . Write Etna today.

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Why Burn Down Your House for Roast Pig?

IN ancient China, men ate meat raw. But one day, while Ho-ti the swineherd gathered mast for his hogs, his stupid son Bo-bo, playing with fire, burned down their straw hut. Bo-bo sniffed the odor of burnt pig. He touched one to see if it was still alive, scorched his fingers, put them in his mouth and was amazed at the delicious taste. Father came home and caught his son devouring a pig. Ho-ti tried one, too, found it intoxicatingly sweet and satisfying.

Thereafter, neighbors observed feverish building of new straw huts at Ho-ti's, followed always by conflagrations. The secret leaked and fires became widespread. In a few weeks even his Lordship's town house was on fire. Finally, straw for hut building disappeared from the market and young pigs could not be had for love or money. At last, after many generations, a wise man arose who said that a pig could be roasted without burning down an entire house.

Thousands of years later, we Americans feast deliriously on "roast pig." Accompanying our delights are fires of inflation, which can destroy our values just as certainly as the roasting of Ho-ti's pigs consumed his earthly possessions. But surely we need not await the coming of a sage to tell us not to burn down our houses to enjoy the delights of roast pig!

Let us unite to stop the ruinous flames of inflation. Curb wasteful and unnecessary government spending. Balance our Federal budget. Control our national debt and reduce taxes. Only in this sane way can we produce more straw and enjoy our houses, raise more pigs and eat them, too.

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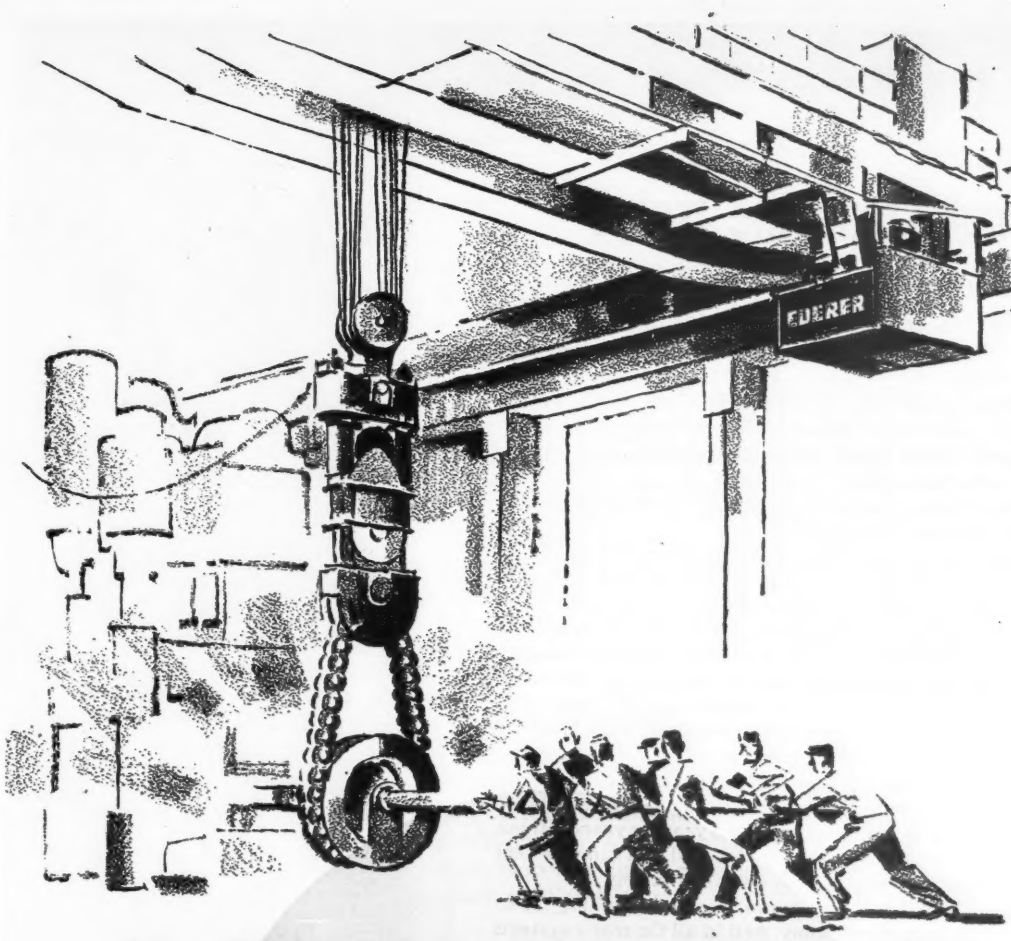

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At the Isaacson Iron Works, large fabricators of heavy steel equipment and forgings, requirements for a crane to serve their 1500-ton steam press are exacting. EDERER "job-engineered" this heavy duty 50-ton crane to these exact requirements. It has been in continuous service for the past 9 years—handling some of the heaviest forgings made on the Pacific Coast.

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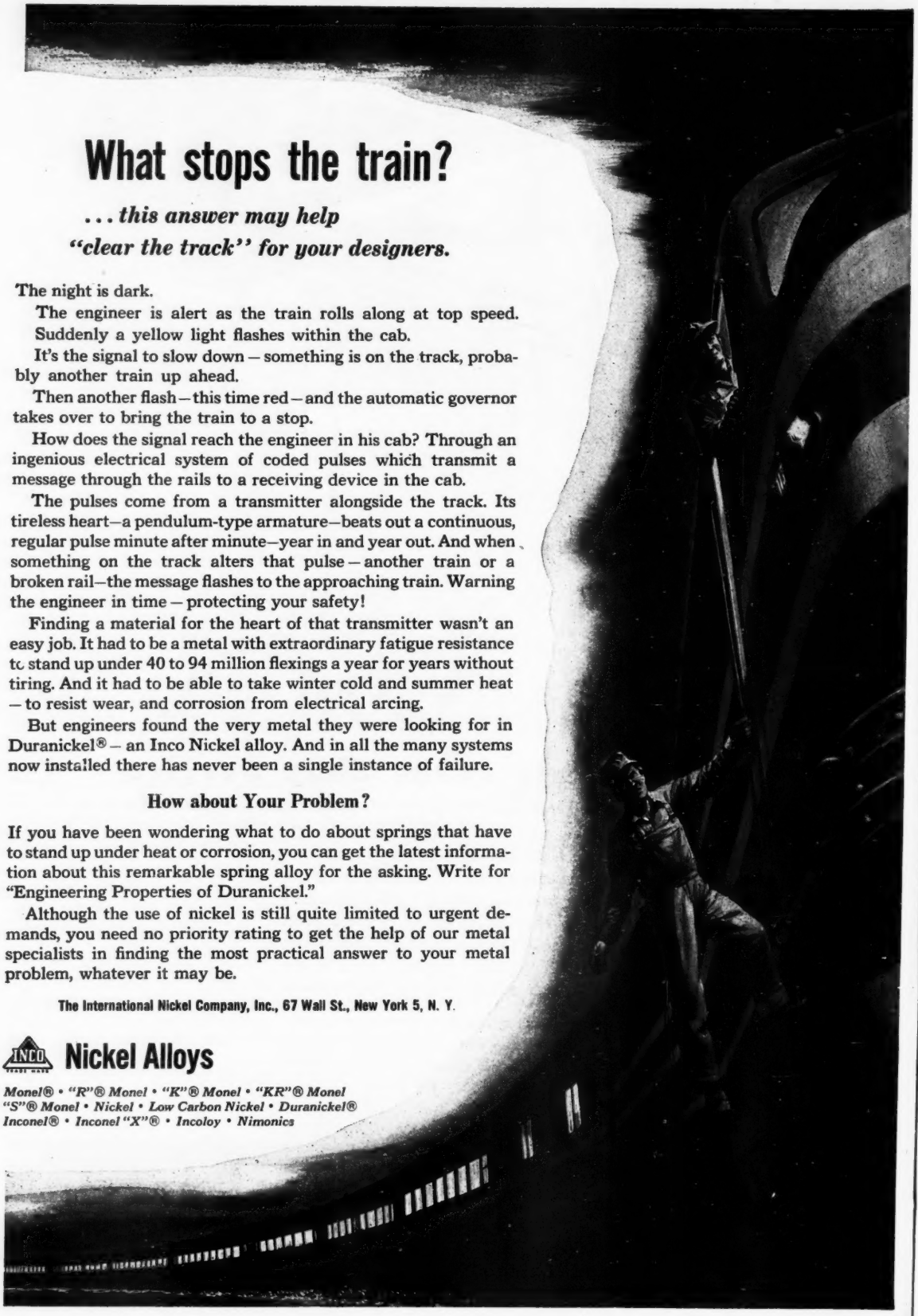

What stops the train?

... this answer may help "clear the track" for your designers.

The night is dark.

The engineer is alert as the train rolls along at top speed. Suddenly a yellow light flashes within the cab.

It's the signal to slow down – something is on the track, probably another train up ahead.

Then another flash – this time red – and the automatic governor takes over to bring the train to a stop.

How does the signal reach the engineer in his cab? Through an ingenious electrical system of coded pulses which transmit a message through the rails to a receiving device in the cab.

The pulses come from a transmitter alongside the track. Its tireless heart—a pendulum-type armature—beats out a continuous, regular pulse minute after minute—year in and year out. And when something on the track alters that pulse – another train or a broken rail—the message flashes to the approaching train. Warning the engineer in time – protecting your safety!

Finding a material for the heart of that transmitter wasn't an easy job. It had to be a metal with extraordinary fatigue resistance to stand up under 40 to 94 million flexings a year for years without tiring. And it had to be able to take winter cold and summer heat – to resist wear, and corrosion from electrical arcing.

But engineers found the very metal they were looking for in Duranickel® – an Inco Nickel alloy. And in all the many systems now installed there has never been a single instance of failure.

How about Your Problem?

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The Metalworking Outlook

November 17, 1952

Price Controls Hang On

Don't expect much in the way of price decontrol until after President-Elect Eisenhower takes office. OPS Director Tighe Woods is going to hang on as long as possible. Although on Nov. 13 he did decontrol high temperature steel alloys, he's continuing his policy of establishing local price boards, which some observers think can easily turn into policing agents.

Big Presses: Behind Schedule

The big-press program to build 17 units to extrude or forge large parts for aircraft is behind schedule. The first American press won't be ready until next fall. The big units that are already in operation are German-built. One result of this delay is to put suppliers for the program out on the limb. For example, one reason Heppenstall reopened a plant at Eddystone, Pa., was to make the immense die blocks required for the presses. The die blocks aren't needed yet, so the Eddystone facility needs other work, and that's difficult to find for its specialized operations. The plant may have to close for as long as six months.

Aircraft Employment Soars

By the end of this year the aircraft industry, with a total direct employment of more than 700,000, will be the nation's second largest user of manufacturing manpower. At the start of the Korean War it ranked eleventh. More than 2 million Americans were at work in aircraft plants at the peak of World War II.

Simpler Planes?

The Air Force and the Navy have made contracts, probably with Douglas, to build a simplified daylight interceptor stripped of gadgets. The objective is to reduce weight and costs—and also to forestall some of the growing criticism that the Defense Department is gadget-happy in its engineering approach. The design time for aircraft, many believe, is getting out of hand. During World War II, Pratt & Whitney's R-4360 Wasp Major piston engine required 730,000 design man-hours. Its new J-57 turbojet engine required 1.3 million design man-hours.

More About Titanium

So impressed is the Defense Department with the potentialities of titanium for aircraft and other military uses that it has authorized a basic research program in the field of extractive titanium metallurgy. The Office of Naval Research will administer the project. Two pilot lines are being set up by aircraft producers to build airframes with titanium skins, instead of aluminum. Also being considered for airframe skin is glass-plastic combinations.

Watch Magnesium

Magnesium is another metal to watch (p. 60). Only 45,000 tons are being consumed annually, although the industry can produce more than twice that. Automotive applications may be one of the biggest

Production-Engineering News—p. 85 *The Market Outlook—p. 171*

future markets. The metal can compete, particularly for functional, rather than decorative parts. The B-36 is still the tonnage champ in using magnesium, although a ton of extruded magnesium floor beams goes into each C-124A cargo plane. The H-19 helicopter uses about 600 pounds of magnesium sheet and sand castings in its airframe.

Look to the Country

Electric utilities and appliance makers are eyeing the farmer. Estimates are that 88.1 per cent of American farms are electrified, but 80 per cent of the farm load goes into the house. National Electrical Manufacturers Association, at its meeting in Atlantic City last week, showed interest in plugging for more use of electrical apparatus outside the farm house. Those uses include portable silage elevators, automatic feed grinders and blenders, pig battery brooders, tobacco grading lights, combination drying and feeding bins, hay and crop drying equipment and insect attraction traps. Farms used 12 billion kwhr in 1950, 16 billion in 1951 and may use as much as 70 billion kwhr by 1970.

Big Plans for Transport

Defense Transport Administration wants enough second quarter, 1953, materials to produce 27,000 new freight cars, 1.5 million passenger cars, 325,000 trucks, 14,500 truck trailers and $588 million worth of automotive replacement parts. The automotive requirements may be met, but the freight car program will probably be whittled down.

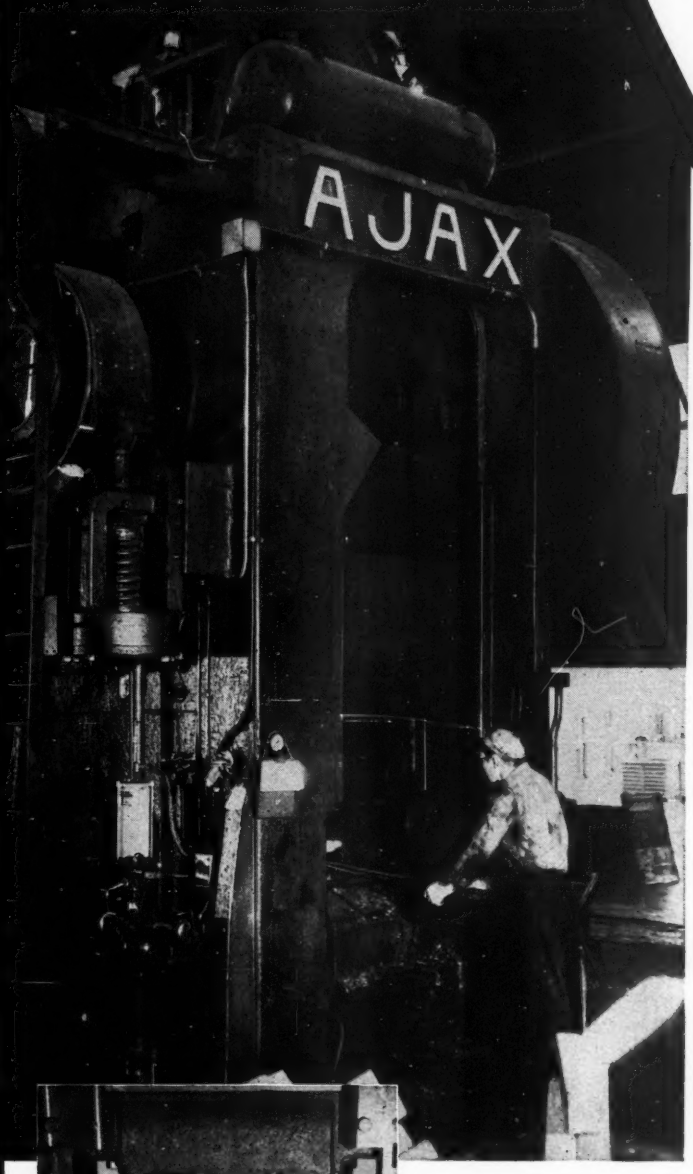
Straws in the Wind

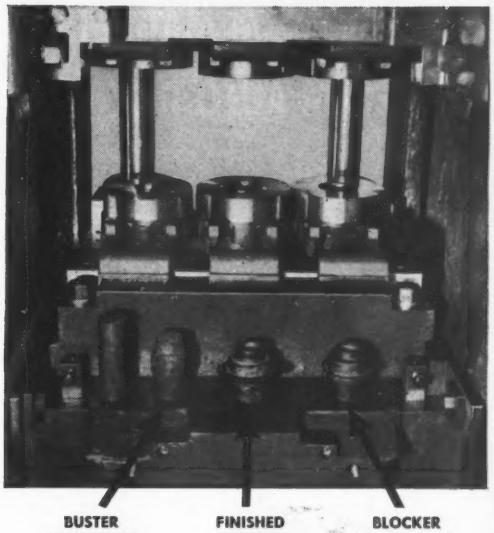
Some 718 government press releases were distributed among Washington correspondents during the 10 business days between Oct. 22 and Oct. 31 . . . Economic Stabilizer Roger Putnam will quit after he settles the coal dispute . . . Bethlehem Pacific Coast Steel Corp. will lay the keel for the first of five Maritime Administration cargo ships at San Francisco Nov. 20 . . . Kaiser Aluminum & Chemical Corp. is placing into initial operation the fourth of eight potlines under construction at its New Orleans plant . . . Export-Import Bank of Washington has authorized credit up to $5 million to Falconbridge Nickel Mines Ltd., Toronto . . . A demonstration plant to recover manganese from steel plant slag is to be set up at Pittston, Pa., by a newly organized firm, Mangaslag Inc., Ft. Worth, Tex.

What Industry Is Doing

The government's dozen or so small business agencies are a help, but not much, say small business executives (p. 57) . . . Small business' portion of defense contracts has dropped from 24 to 18 per cent in two years (p. 59) . . . The death of Phil Murray and the defeat of the Democrats Nov. 4 makes organized labor as rudderless as it has been at any time in the past 20 years (p. 60) . . . Machine tool builders want decontrol of their industry (p. 62) . . . A typical small firm, Michigan Crane & Conveyor Co., is prospering because of fast deliveries, good service and good engineering (p. 67) . . . A small business should remember that its past performances bear heavily on what its future industrial relations will be (p. 68).

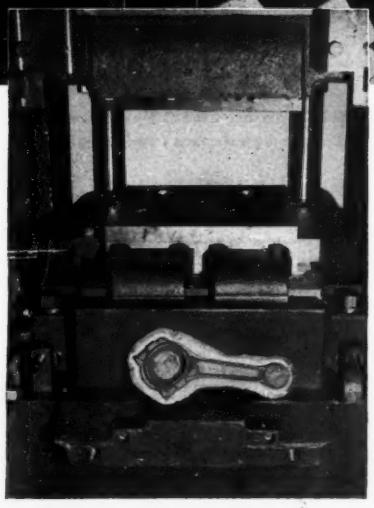
FORGED IN AJAX PRESSES





BUSTER OPERATION | FINISHED FORGING | BLOCKER OPERATION

The progressive forging operations necessary for forming gear blanks for heavy trucks are shown in the foreground. Above, the dies mounted in a 1600 ton press, are in the following order: buster die on the left, blocker die on right and the finish forge die in the center. Each operation is shown in front of the die it is formed in.



Shown here are the dies and bolsters mounted in a 1600 ton press. The product, a heavy automotive connecting rod, is pictured in the foreground.

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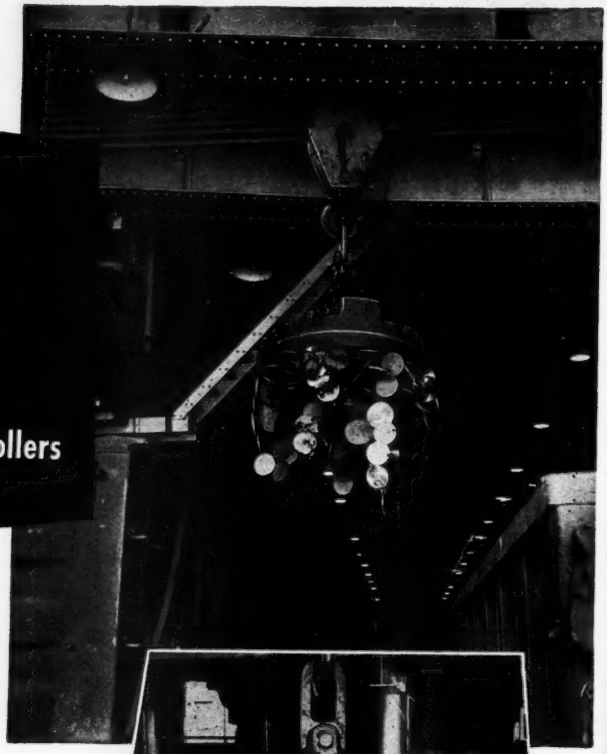

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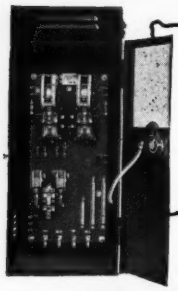

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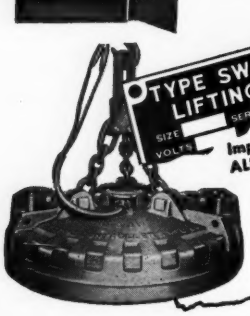

Improved Design Magnet—ALL-WELDED to keep pole shoes tight—keep moisture out—increase the efficiency of the magnetic circuit and prolong life.

55-inch diam. EC&M Type SW ALL-WELDED Magnet speeds handling of large diameter discs stamped from steel-plate.

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THE ELECTRIC CONTROLLER & MFG. CO.

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For and Not Against

At the annual meeting of the marketing division of the American Petroleum Institute, Ben Moreell, chairman of Jones & Laughlin Steel Corp., delivered an unusually constructive address on the problem of communism. He entitled it "To Communism . . . Via Majority Vote."

Admiral Moreell first read the ten steps of the communist program set forth by Karl Marx in "The Communist Manifesto," published in 1848. They are: Abolition of property, heavy progressive income tax, abolition of right of inheritance, confiscation of property of emigrants and rebels, centralization of credit in the state, nationalization of communication and transport, production by government-owned plants, equal liability of all to labor, combining agriculture and manufacturing and free education for all children in public schools.

Then in detail he traced the extent to which we in this nation by democratic processes have embraced most of these measures in varying degree. He pointed out that in embracing them we give tacit approval to the basic idea of communism, which is "the belief that individual freedom, as a way of life, will not work."

What do we propose to do about it? The admiral's answer is simple: "I propose to be for an idea instead of against an idea. I propose to be for freedom—instead of merely being against communism."

This positive approach advocated by Admiral Moreell is refreshing. It deserves careful consideration because it is sound. Moreover, it is proposed at a most auspicious time.

For 20 years we have lived in an atmosphere of confusion in regard to communism. Two Presidents and their highest-placed associates have poohpoohed every suggestion that infiltration of communist influence into our federal government is a menace. By their example, they have encouraged untold thousands of underlings to believe it is smart to be leftish and fashionable to question free enterprise and to make light of individual freedoms.

Fortunately this pink haze soon will be dispelled. Shortly after next Jan. 20 the example set by occupants of the White House will rekindle pride in freedom. Then the program of being for freedom and not merely against communism again will have full play.

E. L. Shaner

EDITOR-IN-CHIEF

PAGING STATESMANSHIP: In a sudden flash two events have dealt severe blows to the most powerful triumvirate American unionism has ever known. On Nov. 4 the people turned down by overwhelming odds the presidential nominee to whom Philip Murray, William Green and John Lewis—unitedly, for the first time—had pledged their support. On Nov. 9

death knocked at Mr. Murray's door.

These happenings present a challenge not only to those who guide the destiny of unions but also to employers, government officials and the public. All four have a stake in the union movement. Obviously, the first step is for CIO to select the best available successor to the able Mr. Murray. The next move is for the new union triumvirate to consider what policies it will pursue in dealing with the Eisenhower administration.

Meanwhile, management, government and the public have a moral obligation to be meticulously fair to unions. This is no time for ax-grinding. Instead, it is a time when statesmanship of the highest order, practiced by the representatives of all four interested groups, could lead easily to a marked improvement in labor relations.

* * *

NEEDED: UNDERSTUDIES: While on the subject of unionism, it is pertinent to consider a serious defect in organization. Union leaders are forced to remain in office long beyond retirement age because there are no suitable replacements or because the feuding among aspiring successors is considered detrimental.

Philip Murray remained on the job long after he wanted to retire. William Green should have quit ten years ago. John L. Lewis hangs on because his is a one-man show. Inevitably there must be changes in A.F. of L. and U.M.W. soon. The pity is that in remaining on the job too long the veterans have prevented younger men from gaining the experience they need if they are to take over effectively. Business executives once were guilty of this mistake, but in most companies they have learned their lesson. They now plan for competent replacements in depth. Unions could adopt the same policy with profit.

* * *

AID FOR THE "SMALLS": Readers of this issue (pp. 57, 58, 59, 64, 67, 68, 69) will notice that unusual emphasis has been placed upon the problems of metalworking companies that are rated as "small." It is widely recognized that under conditions existing today the operator of modest size is handicapped in that he cannot command the services of specialists in his own employ to deal with the complexities of labor relations, public relations, government relations, plant safety, etc.

But in lieu of specialists on the payroll, he has access to the services of his own industry's trade associations and to numerous organizations which cater to his needs on specific problems. They can do much more for him than the dozen or so governmental "small business" bureaus whose principal mission is to supply aspirin to ease headaches induced by acts of other government agencies.

* * *

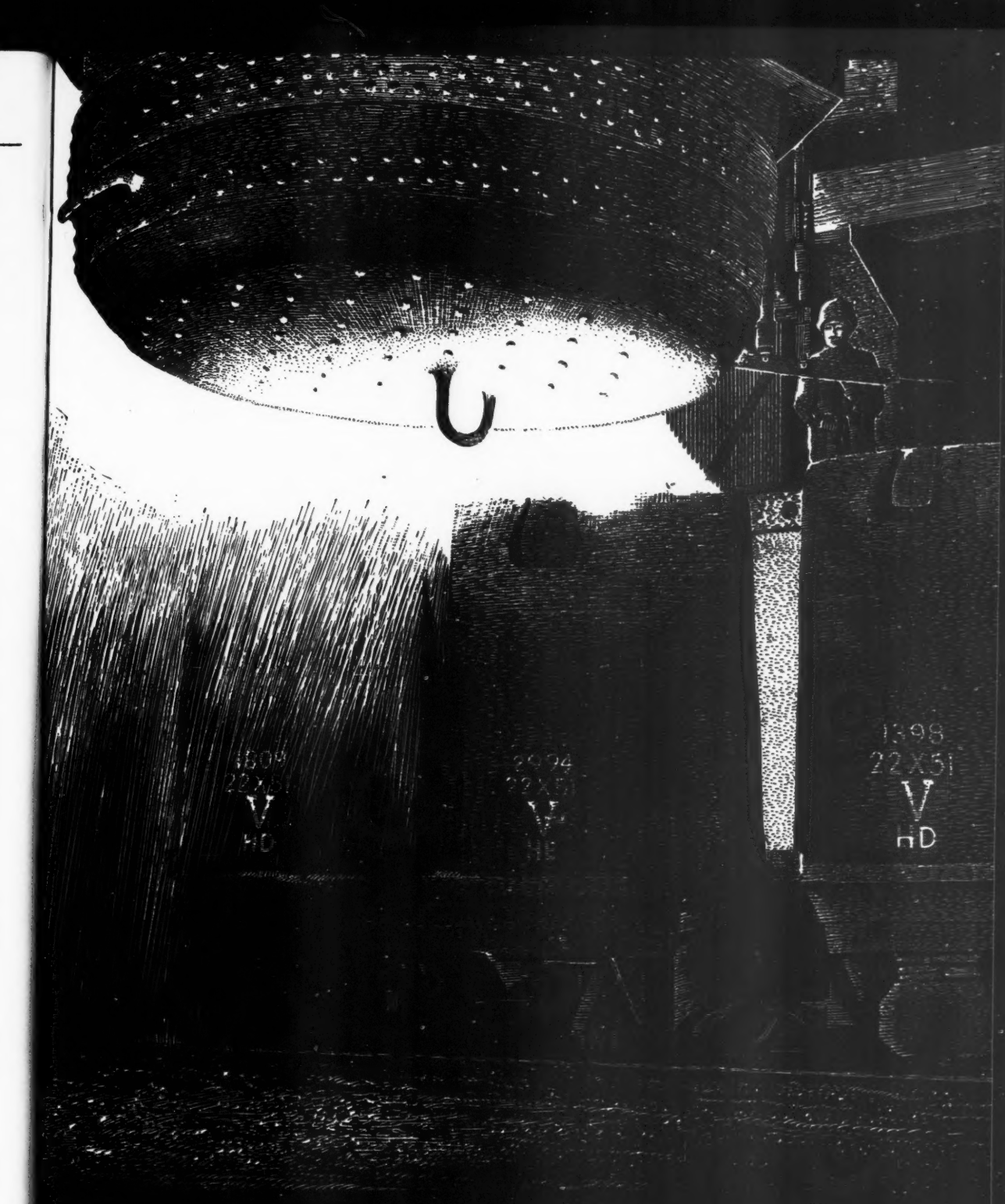
MUST REMAIN STRONG: In time of war or extreme emergency no establishments in the metalworking industry suffer as violently from disruption of peacetime routine as do machine tool builders. They are called upon to treble or quadruple output on short notice. They are subject to more exacting government controls than are many other manufacturers. In some instances, their concentration on government-controlled orders (pp. 92, 93) permits foreign competitors to make inroads on their choicest markets.

These problems were discussed ably at the annual meeting of the National Machine Tool Builders Association last week. It was the conclusion of several speakers (p. 62), including particularly A. T. Bryant of the association's renegotiation committee, that machine tool builders must be accorded fairer treatment in the retention of peak profits in order that they may remain strong enough to meet future national emergencies.

* * *

SURPRISING PARALLEL: Although two months' production was lost by the strike, output of steel in 1952 (p. 171) will top that of the best year during World War II. Production this year will exceed 92 million tons whereas that in the peak war year of 1944 was 89.6 million tons. This wartime record also was bettered in 1950 and 1951. In fact, 1950 was the first postwar year in which production exceeded the 1944 figure. Thus the wartime top was overtaken in the fifth year after hostilities ended.

Before we jump to the conclusion that this is remarkable, consider that in 1923, the fifth year after the armistice of 1918, production was 50,336,940 tons, which falls short by a bare 130,940 tons of the 50,467,880 tons produced in the peak year of 1916 in World War I. This almost parallel recovery after wars a quarter-century a part is surprising.



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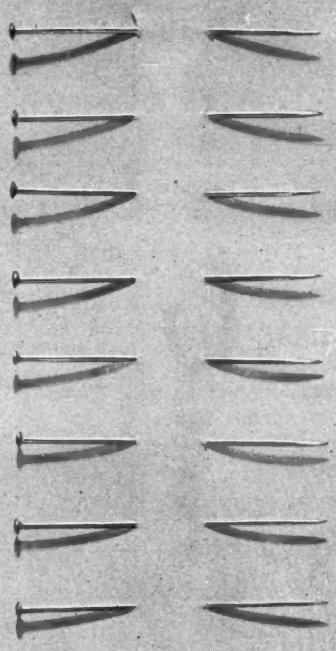

Fabricators looking for
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STEEL UNIFORMITY
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The reason:
Raw materials come
from the same sources
and finished products
are rolled on the
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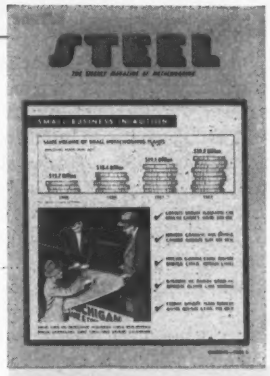
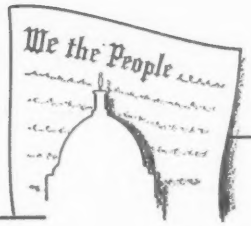
SMALL BUSINESS IN ACTION

GOVERNMENT RELATIONS



The editors study small business, which is big business, since small metalworking firms will do a $19.5 billion volume in 1952



Small businessmen are worried. They don't seek favors from government. They only ask that it let them alone. But government persists in hobbling them with regulations; then it offers them crutches to keep going because of the hobbles. Young free enterprise is finding things mighty rough today thanks partly to government "help".

ABOUT ONE DOZEN government agencies now exist to "help" small business.

A STEEL survey of small businessmen reveals this is what they think about the efficacy of those bureaus: The best way for small business to solve its problems is to try to find the answers on its own first; government can sometimes supply a good answer, but only in special cases.

Big Stake — Small businessmen are bound to have some big problems because they do a big business. More than 16,500 metalworking plants in the U. S. today employ less than 250 workers, but will have an estimated sales volume of $19.5 billion in 1952, up slightly over 1951. The outlook for 1953 is equally high.

Hindrance, Not Help—Most small business executives believe government has hindered, not aided their cause. Arthur B. Davies, executive director of the Smaller Manufacturers Council, Pittsburgh, puts it this way: "The government won't permit us to make a profit on our regular line. It assesses us with excess profits tax; it stops us from getting material and it has forced us into a position where we must have help anywhere we can get it. We sometimes have to go back to the government and ask for help."

Add to that the reluctance by the Reconstruction Finance Corp. to finance capital expansion, sluggish price relief following material and labor cost increases and maddening red tape and delay in even the most elemental business procedure, and you have a good idea why small plants today are worried about ever growing into big plants.

Biting the Hand?—The government is hurt and shocked by such an attitude. The Small Defense Plants Administration cites as its reason for being, "small firms must be brought into the defense program in increasing numbers in order to . . . maintain a healthy and competitive economy."

Officials of SDPA note its new hard-won joint determination program under which representatives of SDPA are assigned to government procurement offices to work with procurement officials in determining which of their proposed purchases can be supplied by small business and in earmarking all or specified percentages of the purchases for placement with small firms exclusively.

They point, also, to the "Consolidated Synopsis of Proposed Procurements and Contract Awards Information" which lists the joint determination procurements as a separate group and indicates that only small plants may submit price quotations on the proposed purchases. Hardship cases have been granted material through efforts of SDPA and loans for expansion are being granted to small business for expansion through Reconstruction Fi- material through efforts of SDPA, recommendation.

Bare Cupboard?—But small business says the help is much less than claimed. It cites such examples as one screw machine products manufacturer in New York who went to SDPA's local office to try to get a loan for new equipment. Instead of sympathetic interest, he was presented with several "long and involved forms which virtually amounted to a pauper's oath" and was told that it would take some time for the papers to clear after they were filed. He reports that the whole attitude of the agency

was "to get rid of you and get rid of you fast."

Other small businessmen report that if you are fortunate enough to get a loan through SDPA and RFC, there must be an overabundance of collateral which would be adequate for a loan from any commercial source or from RFC without SDPA help. When the small businessman wants information, he finds he must knock on many doors, has trouble finding anyone with authority and frequently ends up saying "to hell with it."

Boiled Down—What the situation boils down to is this, say small businessmen: Small business is becoming a political football with everyone saying something ought to be done, a little actually being done and a great deal more remaining to be done. The aims of the SDPA are lacking in teeth, however sincere its personnel may be in their job. The agency must still beg for things and while its efforts should not be minimized, they're just not enough. Vocal small business support is needed to help strengthen the organization.

But there's another side to the story. Big business can afford experts to keep up with the government regulations and procedures affecting it while the small business can't. Upshot of the situation is that small business frequently isn't even getting the admittedly small amount of help in contract and materials procurement that the government is prepared to offer it.

Greater Fitness — Most small businessmen don't want to go to government, but, as Mr. Davies points out, many situations arise where they have to. They need aid on defense contracts. They have a tax problem. They need more materials. They must plead for a wage case. Their prices are held too low by government restrictions. In all those cases they have no choice but to go to government.

No help will come by damning the government. As a small businessman, you will have to learn how best to deal with Washington. Survival requires greater skill in that art than ever before. The accompanying list gives some of the things your competitors are doing to equip themselves for survival.

How To Improve Government Relations

1. STUDY GOVERNMENT ORGANIZATION

Get a copy of the "United States Government Organization Manual", price $1.00 from Superintendent of Documents, Washington 25, and study the government agencies that affect you. This book lists all government agencies and describes their functions.

2. GET REGULATION COPIES

Have yourself put on the mailing list of government agencies which issue regulations that will affect your business. A minimum list is:

(a) Materials Orders, available from NPA Distribution Section, First Basement, New GAO Bldg., Washington 25. (Digested weekly in STEEL)

(b) Price Regulations, available from your nearest OPS district or regional office. (Digested weekly in STEEL)

(c) "Consolidated Synopsis of Proposed Procurements and Contract Awards Information", published weekly and available from your local chamber of commerce. If they don't have copies, they can write to the Commerce Department and be put on its mailing list.

3. LEARN ABOUT SDPA

Among booklets available are: "Small Defense Plants Administration: What It Is and What It Does"; "How Small Plants Can Sell to the Federal Government". They will give you a background on dealing with the federal government and the services that are available to help you in your dealings. They're available from the Small Defense Plants Administration, 1337 "E" St. N.W., Washington 25 or from your regional office. SDPA also publishes "Management Aids" and "Technical Aids" bulletins to keep you informed on managerial and technical developments obtainable from the same address.

4. DEVELOP CONTACTS

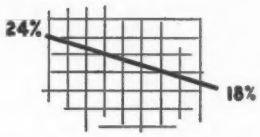
Learn where your regional offices of NPA, OPS and SDPA are located and make friends with people in the know there. You'll find having a friend who's an expert can smooth many of your troubles in getting answers to your questions.

5. WRITE YOUR CONGRESSMAN

SDPA men are the first to admit that they could be doing much more for small business than they are now, but they need support of small business in pressing their demands. Big business has its lobbies in Washington, but small business could have a stronger lobby in SDPA if it worked to strengthen this group. When you find something wrong, complain constructively to your Congressman. Your industry and your country will benefit.

. . . . IT'S PART IN DEFENSE

Small business' share in defense volume has dropped 6 per cent since 1950 as more profitable civilian orders start rolling in. When they do get military work, most small firms prefer subcontracts to prime government orders



Small companies' portion of defense volume has narrowed quickly in the past two years, and an even thinner slice may go to small business from now on.

The Defense Department in 1950 obligated 24 per cent of its procurement dollars to companies designated as in the "small business" category. Present obligations to small firms are totaling about 18 per cent of the dollar volume. The average small company is dedicating somewhat less than 20 per cent of its output to the nation's defense program.

Not Alarmed—Is small business worried about their declining share in military contracts? A survey of small companies by STEEL indicates that most of these companies are concerned over the decline, but not downright anxious. Many company officers said they are casting a cold eye on opportunities for defense work.

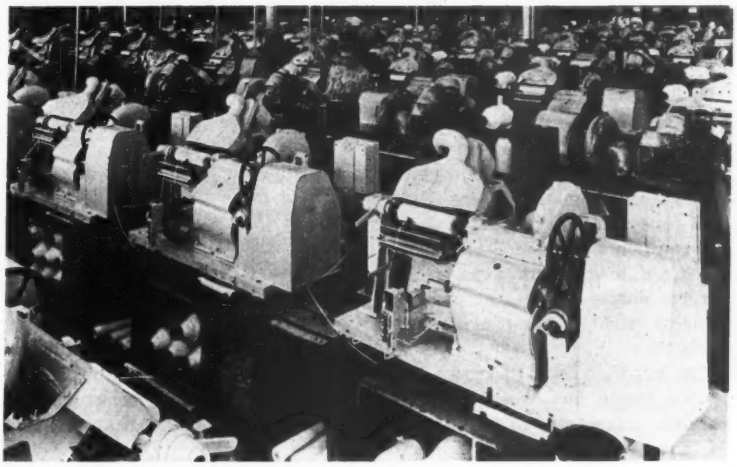
"We don't want defense jobs if we can get something else," says the president of a small metalworking company in Pittsburgh.

"Our company wants only enough defense contracts to fill in production gaps," says a New England executive. "We don't want to expand just for government orders."

Civilian Lure—Prime reason for metalworking officials' cool attitude is the promise of a better-paying civilian market. Sales of most consumer items have risen sharply in the past few months. This rise is now being reflected back on small companies in more contracts and subcontracts. Small companies don't want to be loaded with military work if civilian orders roll in faster. Good contracts might slip through their fingers into competitors' hands.

Small companies, furthermore, are afraid they might put too many eggs in the defense basket. The Eisenhower administration may reshuffle their delivery dates, although the over-all procurement picture will probably remain about the same. Big business often sets up permanent departments to handle defense work. Most small companies can't do this.

Foot in Door — On the other hand, small business doesn't want to count too heavily on civilian production. It wants to keep at least a foot in the defense door, just in case the buyers' apathy reappears or materials again start to tighten up. Most small companies prefer subs to prime contracts. As one manufacturer explains: "Let the prime contractor who has the money and facilities do the paper work and haggle with Washington."



Full Production Fills Filter Orders

Demand for filters fo: industrial use, notably metalworking and chemical, is now heavier and ahead of 1951 volume with most producers. To help fill that demand, filter assembly proceeds rapidly in Commercial Filters Corp.'s recently occupied plant at Melrose, Mass. The 135,000-square-foot plant operates three shifts to produce for fourth-quarter. Orders for the period are the highest this year

More Magnesium

Producers hunt markets, using as one argument the metal's freedom from controls

MAGNESIUM men are drumming for business again.

Actually they never stopped developing new markets for the "lightest of all structural metals." Now they can do it more vigorously, showing prospective converts how and where magnesium can be put to work easily, cheaply and successfully. The Paley Report forecast a sizzling 1845 per cent increase in magnesium use between 1950 and 1975; a record-breaking attendance at the 8th annual Magnesium Association meeting in New York last week was evidence that the industry intends to do all it can now to bear out this prediction.

Here and Now—A big competitive advantage lies temporarily with magnesium in its fight with alternate materials. Industry can get plenty of the metal uncontrolled.

Just a year ago, before six government-owned World War II plants were reactivated, magnesium supply was critical. Today production runs at over 100,000 tons a year and consumption has leveled to about 45,000 tons annually. Balance goes into the national stockpile, but there's no set quota for this purpose. Even though magnesium production has suffered slightly by the power shortage this fall, there's a good possibility some of the high-cost government capacity will be shut down soon.

Stormy Weather—Today about 1000 tons of magnesium go to commercial users monthly, while rated orders take something less than 3000 tons a month, says Dr. J. D. Hanawalt, manager of Dow Chemical Co.'s magnesium department. Largest single user is the aircraft industry with 29 per cent of consumption.

One supplier took the price bull by the horns last week. Howard Perkins, president of Brooks & Perkins, Inc., Detroit, announced a 20 per cent slash in commercial hot rolled magnesium alloy plate 3/16-in. and heavier. The new price of 50 cents a pound makes the metal competitive per square foot with aluminum alloy plate.

NEA

Senator Taft will be among government leaders urging moderation as . . .

New Labor Policy Shapes Up

The swing will be away from Truman policies, but temperately. First changes will be administrative. T-H and other legislative shifts are certain eventually

THE LABOR climate in Washington is due for a change.

The working men will get fair treatment under the Eisenhower administration — probably better than they got under Truman. But the deals which the big labor leaders were able to make with the White House under Truman are a thing of the past.

Businessmen also will find the climate more temperate. No longer will they start off conferences faced with the assumption that they are in the wrong.

But don't expect too drastic changes.

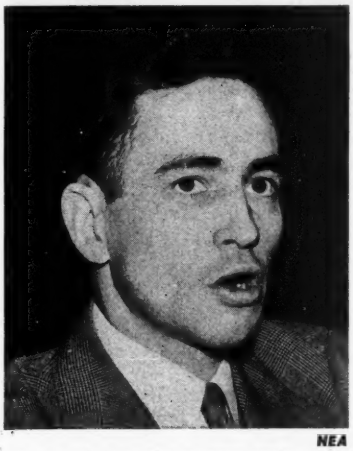
It All Depends—How drastic the changes will be depends largely on how well the unions behave in the months ahead. And that depends partly on who the new CIO and United Steelworker presidents will be. The CIO convention has been postponed until Dec. 1 when the new head will be elected. At that time the steelworkers' president will also probably be picked. Some of the major candidates for the CIO's top position are pictured opposite.

Allan S. Haywood, a CIO vice president, and Walter Reuther, the auto workers' controversial boss, are the most likely candidates for the highest spot, with the latter in the lead.

If deadlock occurs there, a president of one of the other big CIO unions may get the top job—James Carey of the electrical workers, Jacob Potofsky of the clothing workers, O. A. Knight of the oil workers of Joe Curran of the maritime union. Even John L. Lewis and Harry Truman are mentioned, only half facetiously. Unity is a major consideration now, and the man that best can promote that should win.

At the moment, the two leading contenders for the steelworkers' job are David McDonald, present secretary-treasurer, and James Thimmes, a vice president. If a deadlock occurs there, one of the

TOP CANDIDATES AS CIO's NEW PRESIDENT

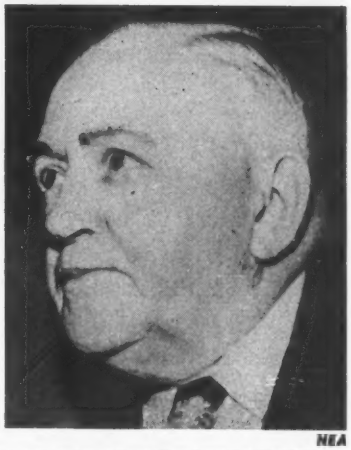


NEA

JAMES CAREY
A compromise in case it's a deadlock.

NEA

WALTER REUTHER
He can get it if he fights for it.



NEA

ALLAN HAYWOOD
Known widely in labor, not nationally

district leaders could get the nod. Generally conceded to be the strongest of those figures is Joseph Germano, boss of the Gary-Chicago District (No. 31).

Quiet Expected—Whoever wins in either job, the odds are that the unions will seek peace for a while and that a moderate approach by government to labor can be expected. Sen. Robert A. Taft (Rep., O.) is scheduled to head the Senate Labor & Welfare Committee and Rep. Samuel K. McConnell Jr. (Rep., Pa.) is due to head the House Committee. Senator Taft will figure strongly in both legislative and administrative approaches to labor, and he is now considered one of the moderates.

Mr. Taft has proposed some 28 amendments to the Taft-Hartley Act which have better than an even chance of becoming law. They fall generally into one of the following eight areas:

1. Extension of the non-Communist affidavit requirements to cover representatives of employers under specified conditions. The idea is to make the affidavit more palatable for union leaders.

2. Amendment of provisions relating to secondary boycotts, both to cure inequities and to close loopholes.

3. Removal of the current ban against voting by strikers who have been replaced.

4. Expedite case handling in the National Labor Relations Board by removing the prohibition against prehearing elections and the reports of hearing commissioners. One of the sore points has been a pile up in the NLRB case load.

5. Redefinition of the word "foreman" to exclude only those employees who are clearly a part of management.

6. Removal of the penalty against individuals who strike during the 60-day cooling off period provided by T-H. That would not change penalties affecting unions or employees violating injunctions.

7. Clarify the relationship between the general counsel to the NLRB and the board itself. That has been a thorny question ever since T-H passed.

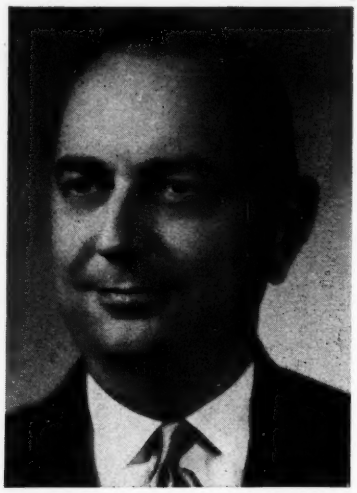
8. Rewriting the provisions of T-H relating to welfare funds to assure adequate supervision by the Labor Department.

Certainty—Once a T-H program is developed, one thing appears sure—that legislation can pass with a coalition of Republicans and southern Democrats. Two other major pieces of labor legislation also are shaping up. The first would junk the current NLRB and immediately establish a new board. The second would ban industry-wide bargaining, probably as amendments to the Sherman and Clayton Antitrust Laws.

Those other two legislative proposals will have a tough road to travel partly because the bills will have to go to Senate and House Judiciary committees where there will be more legalistic discussion and less warmth over labor excesses.

From the White House — The first big changes toward labor in Washington will be administrative, not legislative. Mr. Eisenhower can be expected to appoint a new chairman to replace Paul Herzog of NLRB, who will stay as a regular member, and a board member, John M. Houston, whose term expires next June, will be replaced. The Federal Mediation Service will be strengthened, as will be the Labor Department.

Informed sources point out that the general is expected to rely heavily on Governor Dewey, as well as Senator Taft, for advice in administrative matters. Mr. Dewey has always gotten along well with labor. So if labor behaves, there isn't much chance of any new "punitive" labor laws even though pressures can be expected to build up in the swing back from the Truman regime.



New officers of National Machine Tool Builders' Association elected at White Sulphur Springs, W. Va., on Nov. 13 are, left to right: President, Swan Bergstrom, vice president-director, Cincinnati Milling Machine Co., Cincinnati; first vice president, Herbert Tigges, executive vice president-sales manager, Baker Brothers Inc., Toledo, O.; second vice president, Metz Hollengreen, president-general manager, Landis Tool Co., Waynesboro, Pa.

Tool Builders Ask De-Control

Freedom from controls and clarification of their part in the defense efforts are twin goals of machine tool builders harassed by government regulations

A PROGRAM of progressive decontrol of the machine tool industry as quickly as possible is the surest way to strengthen the industry for defense of the country, in the opinion of the National Machine Tool Builders' Association, in their annual fall meeting held at White Sulphur Springs, W. Va.

More Competition—Although relaxation of federal controls would mean loss of some government aid, tool builders say they would welcome the opportunity of increased competition. Tooling for defense, they feel, is no temporary emergency. An industry subjected to continuous control will soon be weakened.

A. T. Bryant, vice president, Cleereman Machine Tool Co., Green Bay, Wis., and chairman of the renegotiation committee, reported that the probability of greatly reduced shipments beginning in 1953 and the influx of foreign machine tools in the prospect of a saturated market in the future are the most important factors in their renegotiation proceedings since "the industry is earning in 1951 and 1952 the profit that would be normally spread over several years. And those profits are being concentrated into a period of high excess profits taxes, price ceilings and renegotiation. If it is not recognized and if machine tool builders are not left with enough of the peak profit to tide themselves over the coming period of slack so that they can continue servicing and necessary research and development, then the industry will be seriously weakened and the country's defense capability will be impaired."

Held Back—"It is clear," said Bryant, "that the manufacture of critical machine tools was slowed down at the start of the present defense program partly because the industry had been weakened by the unwise renegotiation procedure of World War II."

Clarification of the role of their industry in national defense is asked by machine tool builders. Seeking recognition of the cyclical character of their business, they wish to be allowed to accumulate reserves without penalty and to know what the Defense Department expects of them in event of a national emergency. Authorities such as M. A. Hollengreen, president of Landis Tool Co., Waynesboro, Pa., believe that if the Defense Department made a definite list of weapons needed for a war, the machine tool industry could build itself up in orderly fashion, over a period of years, to meet the need.

CHECKLIST ON CONTROLS

Materials Orders

REPAIR PARTS—Amendment of Nov. 6, 1952, of NPA Order M-47B provides for the first time flexibility in the use of controlled materials for repair parts production and drops the requirement for filing form CMP-60. It also makes quarterly changes in the order's listings. It was effective Nov. 6.

NEW PRODUCTS—Amendment of Nov. 6, 1952, of Direction 1 to NPA Order M-47B prohibits allotments granted for the production of a new product from being immediately diverted to the production of a different product. When NPA authorizes a new product, allotments granted for such production are excluded from the flexibility provision of NPA Order M-47B until the applicant has actually produced the new product to a substantial extent. Amendment was effective Nov. 6.

MRO EXPORTS—Amendment of Nov. 7, 1952, of NPA Order M-79 permits manufacturers to accept and fill non-rated export orders in excess of their MRO export quotas. It was effective Nov. 7.

NPA Regulations

BASIC RULES—Amendment of Nov. 10, 1952, of NPA Regulation 2 requires

persons who have placed rated orders for noncontrolled materials to cancel such ratings when it appears that they no longer need such priorities assistance subsequent to placement of the order. Several minor revisions make the regulation conform with recent developments. Directions 1 and 2 of NPA Regulation 2 are revoked simultaneously. Direction 1 provided for automatic conversion of ratings on certain delivery orders. Direction 2 dealt with the status of DO orders in the third quarter of 1951, the transitional period during which the Controlled Materials Plan was first coming into effect. Those actions were effective Nov. 10.

SULPHUR—Amendment 1 of NPA Regulation 1, issued and effective Nov. 7, 1952, deletes sulphur from inventory limitations.

Controlled Materials Plan

INVENTORIES—Amendment of Nov. 10, 1952, of CMP Regulation 2 gives users of controlled materials the option of maintaining inventories on a class or item basis. Steel, copper and aluminum are divided into classes listed in a new Schedule 1 of the order. It was effective Nov. 10.

PRICING FORMULAS—Amendment 1 of Supplementary Regulation 8 of CPR 30, issued and effective Nov. 5, 1952, extends from Nov. 6 to Dec. 31 the time in which machinery manufacturers may choose an optional method, set forth in SR 8, of calculating increased ceiling prices under the Capehart amendment.

FASTENERS—Supplementary Regulation 1 of General Overriding Regulation 35 and Amendment 1 of CPR 118, both issued Nov. 7, 1952, and effective Nov. 12, provide manufacturers of bolts, nuts, screws and rivets with an optional method of reflecting in their ceiling prices a pass-through on increased costs for steel and aluminum.

Price Regulations

MACHINERY—Amendment 40 of CPR 30, issued and effective Nov. 12, 1952 in order to avoid conflict with CPR 161, clarifies the coverage of CPR 30 with respect to electronic devices, industrial fans and blowers and food and beverage machinery.

STEEL ALLOYS — Amendment 27 of General Overriding Regulation 9, issued and effective Nov. 13, 1952, exempts from price control producer sales of high temperature steel alloys.

COLLAPSIBLE TUBES—CPR 178, issued Nov. 13, 1952, and effective Nov. 17, sets new price ceilings for fabricated aluminum, tin, lead and tin-lead alloy collapsible tubes and for services of converting tin and lead into fabricated tubes. The new ceilings reflect industry-wide increases permissible under CPR 22.

NICKEL SCRAP—Revision 1 of CPR 29 incorporates changes and clarifications which are consistent with industry pricing practices in preparing, grading and pricing of pure nickel scrap, monel metal scrap, stainless steel scrap and other scrap containing nickel, chrome, etc. The revision was issued Nov. 4, 1952, and made effective on Nov. 8.

Rx MANAGEMENT CLINIC

KNOW HOW TELLS HOW industry solves its problems. Metalworking executives will be interested in reading YOUR comments on the problems or opinions expressed.

Coffee Breaks

● Every office, factory or mill has a nook or cranny for a coffee, cigarette or candy vending machine. With a little initiative on the part of management, a vending machine operator or promoter can be contacted and agreement made to have him place vending machines at any designated location. Operators are eager to place machines and will usually pay a percentage on the take. With provision for coffee, candy, etc. in the office and plant there is little reason for employes to ask for snack time during working hours.

Efficiency engineers report production is increased by ten minute rest periods at mid-morning and mid-afternoon. Employees will co-operate in keeping this period if a horn or bell is sounded at the start and end of the "break." A definite time will assist management in enforcement of such a regulation.

Liberal but definite regulations pay off in fairness to both management and employees.

STANLEY R. FRETZ, Buyer
Lansdale, Pa.

● The problem of coffee time is a hot potato. It is something we cannot be hardboiled about, yet we cannot be overindulgent. Many of these so-called rest periods do not work out or answer the purpose they were intended for. Employees drink their coffee when they think they need it and do other things at the rest period.

Most employees want to obey the rules and policies, but it is the few that don't who cause the most trouble and difficulty. Employees have been drinking coffee during the work hours since I started working as a young boy. It is reasonable and decent treatment.

If we occasionally praise good qualities, use encouragement, and appreciation we need only call attention to the employees' mistakes indirectly to correct a fault like this.

A. E. SALMONS, Tools Supervisor
Dixon Valve & Coupling Co.
Philadelphia

Foremen Feuding

● Logical solution would be to split the grinding department into two sections, allocating the machines and work proportionately between the foremen. If it weren't for the specialized know-how involved, I would definitely transfer one of the foremen to another department for the good of the men's morale. The employees' opinion of their foremen can't be too high when they are ordered to do things detrimental to plant efficiency.

Foremen, as part of management, should co-operate and promote increased production and teamwork instead of seeking individual honors or venting personal feelings. Without this spirit they lack one of the prime requirements of foremanship and should not be worthy of such a position.

A pep talk by higher supervision during the early stages of a foreman feud would help immensely, but once started and allowed to ferment the best solution would be as outlined above.

CARL J. SARNE
Planning Dept.
Philadelphia Naval Shipyard

THIS WEEK'S PROBLEM

Young Foreman—*"When one of our older foremen retired recently, we appointed a young man well-liked by his fellow workers as foreman in the department. He's naturally aggressive and makes a fine leader.*

"But he's having trouble with an older employee who's been in the department much longer and knows the job better than anyone in the plant, but just doesn't have the ability to handle men. The older employee feels that he should have been made foreman and because of his resentment continually tries to make his new foreman look bad.

"We won't want to fire him for he's very valuable in his job and has been a loyal worker for many years. Perhaps we made a mistake in making the younger man foreman even though he can handle men better. What would STEEL's readers do in this situation?"

(NAME WITHHELD)

Send your comments or problems you'd like to see discussed to "Management Clinic", STEEL Magazine, Penton Bldg., Cleveland, O.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Small business can look for more help from SDPA with "circuit riders", military personnel in SDPA regional offices, more joint determinations and loan expediting

TO INCREASE its contacts with small business firms, the Small Defense Plants Administration is organizing a staff of "circuit riders" in its regional offices. These men are to make regular visits in industrial areas where no SDPA representatives are stationed. They are to contact not only small firms, but local chambers of commerce and similar organizations interested in helping small business in their community.

The agency is discussing with the Navy a plan to assign naval personnel to each SDPA regional office to assist small businessmen interested in selling to the Navy. It is hoped a similar arrangement can be worked out with the Army and Air Force.

Joint determinations as to specific procurements reserved for small business are reported off to a good start. As of Oct. 10 a total of 243 joint determinations had been made on an estimated $125,456,790 of procurement, and 49 contracts amounting to $38,678,907 had been awarded to small firms. Joint determinations, despite some difficulties in launching the program, are being made at an accelerated rate.

Government procedure in making loans to small business would be speeded in the event of adoption of a plan now under discussion by the SDPA and the RFC. This would authorize the field offices of the two agencies to work together in expediting small business loans without the delays that are incurred under the present system of acting finally in Washington on the loan applications.

Ex-Congressman Tax Expert . . .

Representative Fred L. Crawford of Michigan has arranged, following expiration of his term on Jan. 3, to set up a new firm with offices in the Investment Building, Washington. It will specialize in legislative and tax matters and government finance. His partners will be J. Hardin Peterson, former congressman from Florida, and Irwin W. Silverman, presently chief counsel, Office of Territories, Department of the Interior.

It Ought To Be Good—

Something seemed wrong.

Base metal producers properly were allowed to reflect higher wages in their price increases. Metal consumers, however, were only allowed to increase their prices by the bare increases in costs of material plus such help as they could get from the OPS industry earnings standard.

Observing that this sort of treatment is "a double-standard formula" which "appears wholly insupportable", the House Small Business Committee has requested ODM Director Henry H. Fowler to submit a full explanation.

Mr. Fowler is now in Europe. Metalworking executives hope he will find time to make his explanation before he leaves the government service Dec. 31.

Renegotiation News . . .

As an aid to defense contractors in determining which of their sales are subject to renegotiation, the Renegotiation Board has published Renegotiation Staff Bulletin No. 3D showing value and percentage of shipments of "B" products during the fourth quarter of 1951 and the first quarter of 1952. Copies may be had at 15 cents from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

An amendment to Section 1455.7 of the Renegotiation Regulations reverses the previous practice of granting automatic exemption to subcontractors when the related prime contracts were exempted. Subcontracts hereafter will be considered without relation to the primes.

AEC Publishes Patents . . .

A nickel welding process, a high-speed turbine whose rotor is both supported and driven by air, a portable radiation survey instrument, an electronic analyzer, a method and apparatus for measuring tightness of vessels—these are listed among 26 additional patents just released by the Atomic Energy Commission. Interested parties can obtain copies of its release No. 450, listing and describing these patents and identifying them by number.

A Running Record . . .

For the first time, importers are about to have a service which will keep them posted continuously on changes in tariff rates. In preparing the new "United States Import Duties—1952," the Tariff Commission has hit on a loose-leaf book in which room is allowed for supplemental and corrected pages so that the new book will be up-to-the-minute at all times, keeping up with frequent tariff changes.

This is in marked contrast to the former books which contained errors even as they came from the presses, so that importers had to keep constant contact with customs houses in order to be informed about the many and frequent changes in rates that develop under the reciprocal trade agreements program. The new loose-leaf book will be ready for distribution by the Superintendent of Documents, Government Printing Office, Washington 25, by the end of November. The price is $3.25 for domestic and $4.25 for foreign mailings and these prices include supplemental and corrected pages for at least one year.

ROTARY SHEAR?

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THIS Morgan shear can cut bars up to 3 sq. in. cross section area at speeds up to 3000 F. P. M. The opening and closing of the knives is performed hydraulically, dispensing with the use of magnetic clutches and brakes, thereby eliminating all "creep" and slippage. The action is positive and precise. The "V" shape cutting edge of the knives leaves no "beard" or slivers where the cut is made. Here we show twin shears for double strand rolling.

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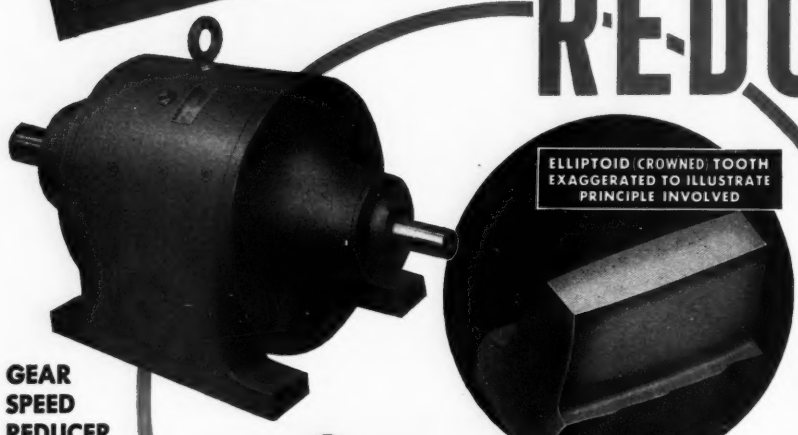

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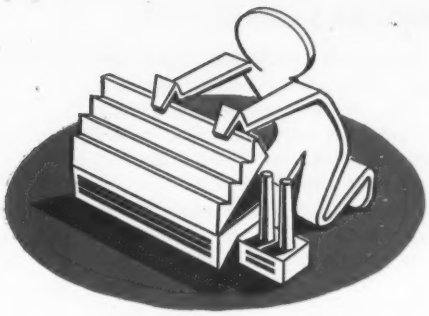
SMALL BUSINESS IN ACTION

A Case Study...



Michigan Crane & Conveyor Co., both small and relatively new, has had a spectacular growth since 1946. Here's an analysis of why

WHAT MAKES a small company prosper, especially in these times of high costs, controls and scarce labor?

Michigan Crane & Conveyor Co., Detroit, thinks it has a three-part answer—fast delivery, good service and good design of its cranes and related products.

Rule of Three—A trio run the company today, have hoisted it to a million-plus dollar stature in less than seven years. A. B. Bogle is president; his son, L. N. Bogle, is vice president. General manager is Mike Gruich.

Production now averages one crane a day. The units range up to 20-ton capacity, 150-foot span. A specialty of the house is the five-ton size on which five-day delivery is sometimes promised. There's no secret method by which Michigan Crane is able to expedite manufacture. It simply does a lot of long-range planning to make sure it has an ample supply of all the components before it quotes on a job. This means, for example, that currently almost $250,000 worth of hoists are on order, and other long lead-time items such as controllers are contracted for far in advance of delivery.

Anticipation—"We anticipate the demand and what items will be short and then proceed to stock that stuff," is the explanation Vice President Lou Bogle gives. He believes their inventory of hoists is the largest in the area. Michigan Crane gets most of what it wants because it has sold the idea to suppliers that it's a growing company.

It can't always get everything needed, and then improvisation comes into play. Production Control Manager Don Wenzel and Lou Bogle agree that the flexibility of their small organization is in great measure responsible for Michigan Crane's production performance. The firm has staffed a two-shift operation with about 95 men, including field service crews, and are sorely in need of more who have sufficient electrical or mechanical know-how.

Service—Michigan Crane is paying close attention now to its service setup. It is instituting a preventive maintenance program for crane users. That entails periodic check-up by its service crews before equipment malfunction causes down-time. The service portion of the company's business is expected to grow when original equipment demand declines. The company has recently been named the area's service representative by a large hoist manufacturer.

So certain is Michigan Crane of service volume for the future that it has been turning down propositions to subcontract for other makers.

Engineering — General Manager Mike Gruich and his engineering team contribute to the third aspect behind the company's growth. New type crane interlocks have been developed and patented. The newly developed "Man-o-Steel" heat-treat furnace loader is also in production. That device works by a series of synchronized vertically moving sections which have the dual function of elevating and metering uniform quantities of parts from a hopper to the furnace. The team is currently at work on a remotely controlled manipulation device.

Some opportunities for development of unique crane-type devices made possible by defense contractors' peculiar needs have also challenged the engineering staff. The work was worth it because those customers have good defense ratings, a help in materials procurement.

What It Means — All this adds up to the prospect that the company will boost its sales over the $2 million mark in the next year or two. Its sales have more than doubled in the past year, and currently quotations are going out to prospects at the rate of more than $1 million worth of equipment a month.

Contrast that with the situation in 1946 when A. B. Bogle and five employees set up shop, using "an up-ended barrel for a desk." Then capitalized at $5000, Michigan Crane sold $120,000 worth of equipment the first year. Building cranes in its first plant was like putting boats together in the basement.

Now the firm is more comfortably situated in a plant at 115 McKinstry St. which has 22,000 square feet of space. Although it was just occupied this spring, the Bogles are wondering now how big their next expansion program ought to be.

The Reason Why—The story of Michigan Crane is like a story of many other small companies: It has carved out a niche for itself. The economy must need Michigan Crane and others like it because the economy provides the climate for so many small firms—more than 16,500 in metalworking alone employing less than 250 and doing a business that this year will hit an estimated $19.5 billion.

Neglected: Small Plant Safety

Companies with less than 100 employees contribute 40 per cent of the worker injuries with only 25 per cent of the employees. So says the National Safety Council in a recent report.

The average compensations case costs $369. As a small business man, what's your accident rate and cost? Ned H. Dearborn, president of the council, says that most small businessmen have no idea of the cost of accidents to them, both directly and indirectly in lowered employee morale and greater turnover.

An intelligent safety compaign can help reduce such costs for the small businessman. Contact the council at 20 N. Wacker Dr., Chicago, or Smaller Business of America Inc., 406 Euclid Ave., Cleveland, for details. You may be able to duplicate the experience of a small galvanizing company which reduced production time lost through accidents from 1200 days a year to only 4 days. Labor turnover, which ranged from 5 to 10 per cent a day, was practically eliminated.

Foreign Facts for Small Firms

Small business firms can obtain information on foreign and domestic purchases involving Mutual Security Agency funds from field offices of the Small Defense Plants Administration.

MSA publications which will be provided regularly to all SDPA field offices include: "Memo for Small Business," "Small Business Circular" and "Contract Clearing House Service," as well as appropriate portions of the MSA "Field Counselor Roster." Those publications contain information on the basic procedures for contracting with foreign countries, complete descriptions of items to be purchased, specifications and other information of interest to small businessmen.

SDPA field offices are in Boston, New York, Buffalo, Philadelphia, Pittsburgh, Atlanta, Cleveland, Detroit, Chicago, Minneapolis, Kansas City, St. Louis, Omaha, Dallas, Denver, San Francisco, Los Angeles, Seattle, Portland, Oreg.; Richmond, Va.; and Nashville, Tenn.

SMALL BUSINESS IN ACTION

Industrial Relations

Are you trapping yourself? Small businessmen need a formalized industrial relations program to protect themselves against a history of expedient but ruinous labor practices because . . .

Legally your industrial relations program is the history of your own past personnel practices. Many small businessmen don't realize that in dealing with the government, unions and employees it's the past they're going to have to live with. For that reason, it's important that you don't let your policies toward employees drift—you could find yourself trapped by a history of expedient, but crippling decisions.

Example—Look what happened to these companies:

Company A was small and gave six paid holidays to all of its employees, defining no eligibility requirements. But the company began to grow from its former 25 or 30 employees and a union came in. Today the company is much larger, but it was forced to retain the six paid holidays with unsound eligibility requirements because they were previous practice.

Company B fired an employee that it disliked because he was late three mornings. It did not fire another employee who was also late three mornings because it liked him. The fired employee filed an unfair labor practice charge with the National Labor Relations Board which was upheld because he showed the company had discriminated against him. The incident also gave the union a wedge and the plant was unionized.

These stories are much simplified, but they demonstrate that decisions which may seem wise when they're made can backfire on management later. That's why your industrial relations program should be formalized and based on sound management principles: The exception today may become the rule tomorrow.

Checklist—In the accompanying listing Associated Industries of Cleveland suggests some of the steps you should take. They are the basis of a sound industrial relations program for you, even though you're a small company and may not even have a union. The basis of sound industrial relations is formalized policy based on the best interests of management and its employees with an intelligent eye on current area practice. You must keep in line or lose employees.

If You Have a Union—Careful examination of big issues like group insurance is frequently overlooked by smaller companies prior to contract negotiations because they feel they won't be hit. To a large extent this is true, but there is usually a modified form of the practice which will be presented after you've been threatened with the big issue. Expect some modified form of the issue and be prepared for it. Have a counter proposal of your own at the bargaining table—often that's half the battle.

Unions are able to push smaller firms around because few with under 100 employees have a full time personnel executive—only about 3 per cent—so usually the president or owner does his own negotiating. Frequently he is unable to give the matter the necessary attention and is unprepared when he faces the union. When the union tells him that the sought practice is industry-wide, Jones may quietly fall into line. Actually the policy may be

Seven Steps for Sound Industrial Relations

1. WRITE YOUR PERSONNEL POLICIES

Written policies give a basis for consistent application of definite practice and prevent unfair labor practice charges. That gives you a solid base for bargaining if you have a union, will prevent misunderstanding and help make you less vulnerable to organization if you haven't.

2. SET UP AN ORGANIZATION CHART

Another key to prevention of misunderstanding is a clear definition of authority and responsibility. Let your employees know exactly how each of them fits into the company team. Toes won't be stepped on so readily and you'll be prepared to handle wage scaling more intelligently if you have such a schedule, too.

3. HOLD EMPLOYEE MEETINGS

Meetings of management and its employees help mold a feeling of mutual understanding and solidarity. Talk about mutual problems like how the product is selling, production problems or employee welfare. You'll have your hand on the pulse of your labor, can spot trouble and do something about it before there is a flare-up.

4. KEEP COMPLETE PERSONNEL RECORDS

It will help you and your employee know where you stand, give a concrete basis for your dealings together. A minimum for even a small company should be: (a) an application form; (b) employee job record; (c) grievance form; (d) physical examination record; (e) employee production record; (f) warning form.

5. WRITE EMPLOYEES REGULARLY

Like employee meetings, a news letter at regular intervals helps mold team spirit. Tell employees about company problems and what they can do to help, company plans and how they will affect the employees and their families and news of employees and their doings.

6. PUBLISH ALL UNION AGREEMENTS

Be sure the employees know the exact score between management and the union all the time. Let them hear from you rather than from the union. That prevents the feeling that you're lining up against them and the union. Let them know what you've done and why you did it. Make them feel as much or more a part of management as you can.

7. KEEP YOUR PERSONNEL PRACTICES IN LINE

If you don't have a union, keep apprised of the prevalent wage and fringe benefits offered in your area. Don't get behind your neighbors for you'll be forced into line by supply and demand if not by the union and probably by both. Make your position strong competitively. Don't give the union a sales story.

held by only one or two shops, but if Jones acquiesces, unions will use his shop as an example to other plants. Be sure you know what current practice is in your city.

In Arbitration—If you have a union, chances are your contract has an arbitration clause. Chances also are that it's not used often since the price of arbitration is too costly to a union where the dues from the whole company concerned are small. But if you do have a matter for arbitration, these are the types you should consider:

The single arbitrator, where both sides present their cases and a decision is made by the umpire later.

The three-man panel, where a union and management representative each sit with the arbitrator and discuss the issues. This insures that the arbitrator is aware of all the facts at the time a decision is reached and is the most effective for small companies.

The five-man panel, an expansion of the three-man panel with two men from the union, two from management and an arbitrator. It is normally too unwieldy for most small companies.

The Past—Arbitration is only as good as the arbitrator. Check a record of his past decisions before selecting an arbitrator and be sure that you use a reputable arbitration association as a source of arbitrators. Here are some other things to consider:

His role could harm the company in setting a precedent that would lead to unduly high labor costs, possibly bankruptcy.

Don't employ an arbitrator during contract negotiations. Mature labor relations is founded on labor and management reaching a basic agreement by their own efforts.

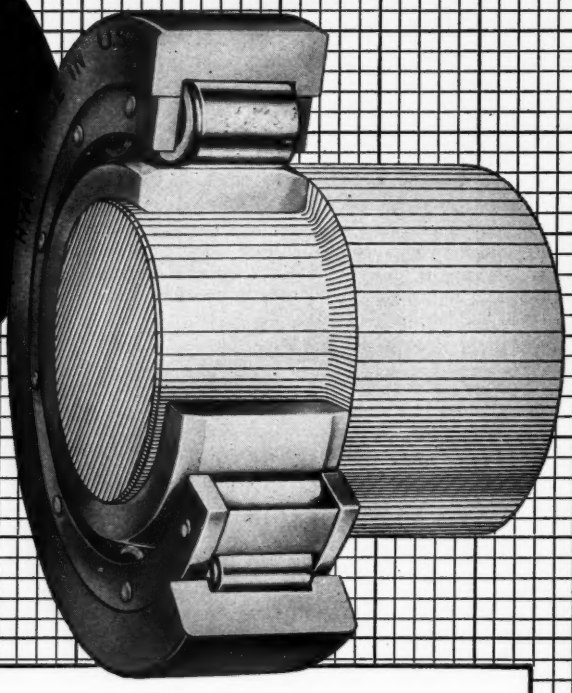
Be sure the arbitration clause of your union contract deals only with interpretation of the contract clauses. An arbitrator's decision should not modify, alter, add to or subtract from the contract.

Avoid arbitration on pension and insurance issues if you can. A decision that may seem morally sound to the arbitrator could lead to financial ruin for a company unable to afford such a program.

In Summary — These are the touchstones of sucessful industrial relations: *Know the score in your plant and your community and use what you know intelligently.* Don't let your industrial relations program slide on an informal basis by doing merely what is expedient. Laxity in industrial relations can be as deadly as laxity in inspection or manufacture—it can put you and your company out of the running, leave you prey to exorbitant union demands, maybe bankruptcy.

But if you keep abreast of practice in your area, make sure that you understand the problems of your employees and that they understand yours, you will find your contract negotiations are conducted in an atmosphere of reason. This will make your job easier. For through intelligent industrial relations you will get a more intelligent bargaining committee to represent your workers.

Heavier Press Fits with HYATT HY-LOADS



THE simplest way to mount bearing inner races is by press fitting. Hyatt Hy-Load Roller Bearings are designed and constructed to permit relatively heavy press or shrink fits of races—fits sufficient to retain races properly without resorting to auxiliary devices such as snap rings, lock nuts or keys.

This is possible because Hyatt Hy-Load races are made from carburizing type steels, carburized and heat treated to provide hard, wear resistant, case-hardened surfaces with tough ductile cores. A hard surfaced race with a ductile core permits heavier press fits than a through hardened race.

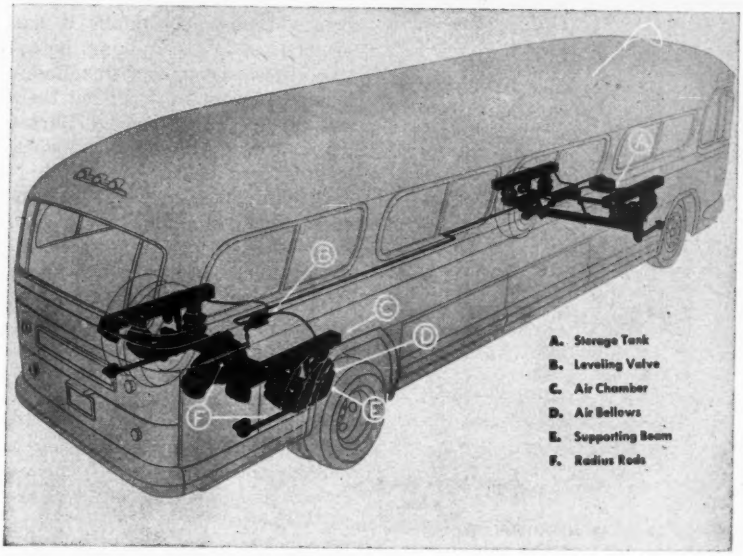
The hazards of slippage, cocking or eccentricity, always present with loose fitting races clamped endwise, are avoided when races are properly press fitted.

For more information about this and many other features of Hyatt Hy-Load Roller Bearings, write for Catalog 547. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

By H. C. TUTTLE *Detroit Editor*

Mirrors of Motordom



X-Ray View Dissects GM Coach

This phantom drawing gives an x-ray view of the new Air Ride Suspension in a 41-passenger coach built by General Motors Corp.'s Truck & Coach Division, Pontiac, Mich. Letters show features of interest in the interior of the bus, designed for inter-city travel. The development followed 12 years of research by GM engineers to improve passenger comfort and eliminate fatigue of travel

Watch for the truck makers to come out with automatic transmissions for some models. They can demonstrate economies in some instances to cost-conscious truck owners

DETROIT

FROM THE TOP of the test hill in the Dearborn Proving Grounds of Ford Motor Co. engineers and reporters recently watched a demonstration which proved the superiority of automatic-transmission-equipped trucks in certain circumstances.

The automatic transmission has been sold to the general public primarily on its convenience—the fact that it eliminates one of the greatest nuisances in driving. This is a consideration which doesn't sit too well with truck operators. They are guided primarily by cost-per-mile of operation, and only secondarily by the amount of work which must be done by the driver. If they can get a truck which makes driving easier while at the same time is able to perform more work at the same, or lower, cost, then they'll take it. The purpose of the Ford demonstration was to prove that there will be such a truck in the near future.

For the Trade—The Ford Division was announcing that its F100 series of trucks in the 1953 model will be available with a slightly modified version of the "Ford-o-Matic." Included in this series are a pickup and panel delivery The new trucks will make their debut in March or April. A parcel delivery van will come along later.

The demonstration consisted of five contests between six and eight cylinder trucks, half with and half without the automatic drive. First was an acceleration race to show that the automatic truck was not hampered by the drive and could keep pace with an experienced driver taking his manually shifted truck through the gears. The automatic showed no superiority in this department, but when it came to power contests, it was a different matter.

Comparison—Overloaded pickup trucks were driven singly up the 30 per cent test grade, going from a standstill at the hill's bottom. Sixes and eights went through the same test, and not only were the automatic transmission equipped trucks able to climb the hill without difficulty—they were able to stop in mid-hill and resume the climb. None of the manually shifted vehicles could do either. A running start was necessary for these to gain the crest.

Two other power demonstrations were made. A manually shifted truck pushed the automatic-equipped truck backwards until the torque converter unit in the latter could overcome the pusher's force and from then on the automatic had its own way. The other test consisted of attempts to drag a 4000-pound load behind it. The load, hooked to the bumper, consisted of a pig-iron loaded sled of wood planking. The manually shifted truck was unable to budge the sled, whereas the automatic drive truck could get it underway and gain speed, both in the low and drive ranges of the transmission.

Race — Wind-up of the demonstration was a "race" between two parcel delivery trucks, driving through simulated heavy traffic. Flags were placed alongside the road at short distances over the more than a mile course, and the drivers braked to 10 mph at the flag and quickly accelerated to the next.

The driver of the manually shifted truck did not shift out of high gear, in recognition of the reluctance of many drivers to shift any oftener than is absolutely necessary. The automatic transmission truck was able to leave the other far in the rear long before the race was completed and widened its lead at every red flag.

The Ford-o-Matic has been altered only slightly for truck installation. Major change is addition of a transmission cooler of the oil-water, heat exchanger type

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already used in some passenger car automatic transmissions. The engine's regular water cooling system is employed. This additional cooling is not required except in extreme operating conditions such as hauling maximum loads over hilly terrain or off-highway use, Ford men say.

For Police Cars—Citing a place where savings have resulted from the use of automatic transmission in heavy-duty driving, Ford engineers point out that the unit has proved more economical in police car installations because it eliminated high clutch repair expense.

GMC Truck & Coach Division of General Motors early this year made what it claimed as the first placement of a fully automatic transmission in a commercial model truck when it offered its parcel delivery vehicle with Hydra-matic.

Pressure Mounts — The heavy truck field, meanwhile, is getting facts thrown at it from automatic transmission makers citing the advantages from the cost and performance standpoint. Allison Division of GM, for example, has had torque converters working in off-the-highway vehicles in the Mesabi range and elsewhere to collect operating and maintenance data. From these, the division claims that the converter power train, consisting of engine, torque converter and differential, shows 47 per cent longer engine life, 400 per cent greater transmission life and 93 per cent more differential life than a train consisting of engine, clutch, transmission and differential.

It begins to look as though when a truck pilot is referred to as a "shiftless" driver, no reflection on his character is intended. His boss may have decided that less work and more play make jack.

GM Tries for Better Roads

If concentration by a tremendous number of people on a problem will bring about a solution, General Motors Corp. has certainly put the right kind of carrot in front of the horse's nose. It's worth $194,000 of that company's money to get the American public figuring how traffic can be unsnarled.

General Motors, of course, is not a philanthropic organization. It wants to be able to make cars at a goodly rate in the future, and it knows that unless something more is done to keep highway traffic moving there simply won't be room enough on roads for cars to operate. Its president, C. E. Wilson, in announcing an essay contest with 162 cash prizes ranging up to $25,000, said that instead of the 53 million cars and trucks on the road today, population growth and increased need for motor vehicles 25 years hence will warrant an 80-million vehicle registration.

You don't need to be a literary whiz to get on the GM Better Highway awards gravy truck. What the judges will count is originality, sincerity and practicality of your solution to "how to plan and pay for the safe and adequate roads we need."

Entry blanks and a highway award fact book may be had from General Motors Corp., or any of its dealers. You have between now and Mar. 1, 1953, to put on your thinking caps and suggest a plan which will get us out of the muddle.

Auto, Truck Output

U. S. and Canada

	1952	1951
January	409,406	645,688
February	467,691	658,918
March	517,207	792,550
April	576,505	680,281
May	546,673	695,898
June	560,947	653,682
July	246,461	522,858
August	293,722	571,442
September	593,060	505,758
October	654,357*	558,971
November		480,199
December		402,729
Total		7,179,161

Week Ended	1952	1951
Oct. 11	138,035	120,543
Oct. 18	138,088	120,810
Oct. 25	144,747	121,215
Nov. 1	155,037	118,743
Nov. 8	147,664	117,342
Nov. 15	150,000*	120,767

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

New Lap in Horsepower Race

Even the vaunted MG is not immune to the horsepower race. When it raises its rating to a reported 80 hp from the present 54 it will be succumbing to what seems to be an irresistible force.

The attempts of some American car company officials to disassociate their products from the trend appear now to have failed badly. Talk is that Chrysler for competitive reasons solely thinks it has to get back in the running, horsepowerwise, as soon as Buick, Cadillac and Lincoln have put out their new model announcements. Chrysler stood by its 180-hp rating when it introduced its '53s.

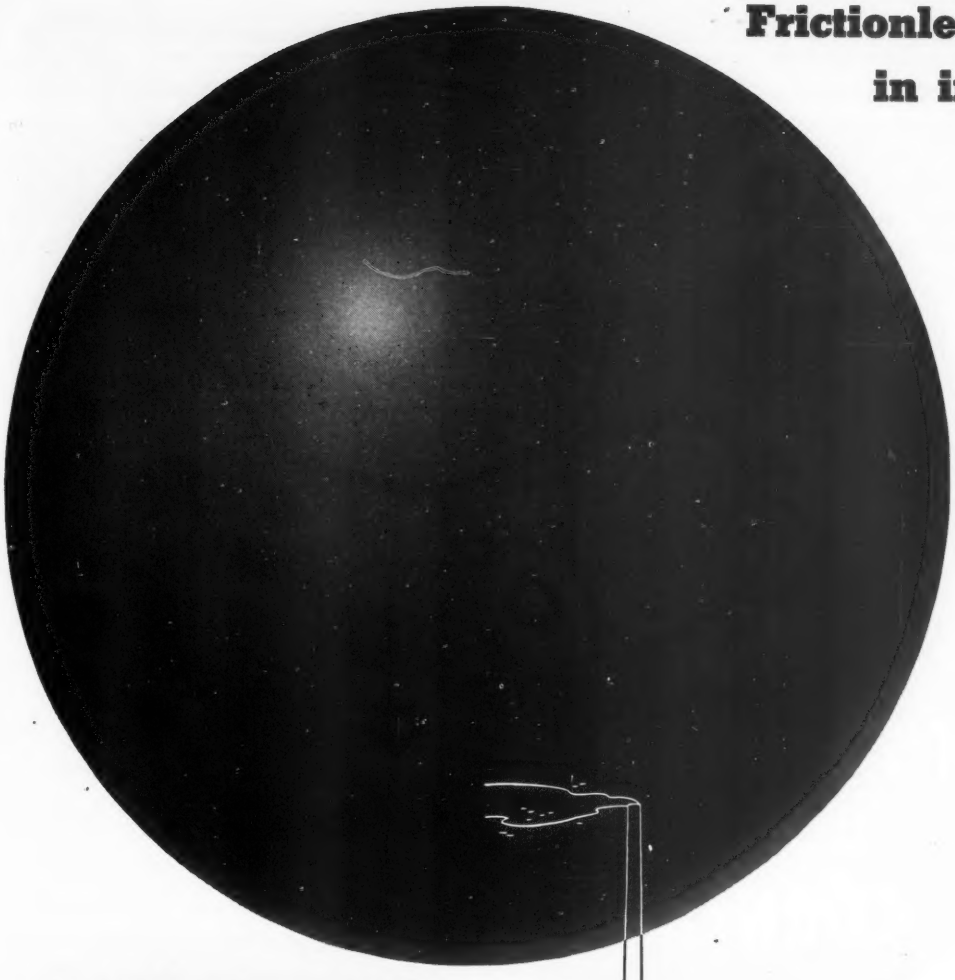
Chrysler has been holding its horsepower in check purposely. Production engines from its Jefferson plant are said to deliver about 185 hp and a rating of 187 is not too unusual. But what really is starting to rankle is that dynamometer test procedures lack standardization throughout the industry. Chrysler men say that by removing the air cleaners, as is done by one competitor, four points more horsepower comes out of the Firepower engine. By correcting to sea level, the way this other company does it, another three horsepower is picked up, and finally by feeding hot oil to the engine, as the other firm does, three more horsepower points are gained. Total rated horsepower, taking all these things together, then is actually 195-197.

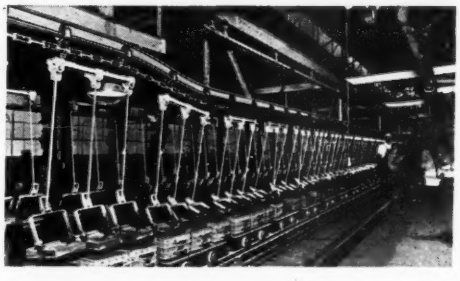
Apparently the conservatives have the upper hand out in Chrysler's executive office, and the test procedure probably won't be changed. But with only minor modifications to the engine well over 200 hp by the usual testing method can be produced.

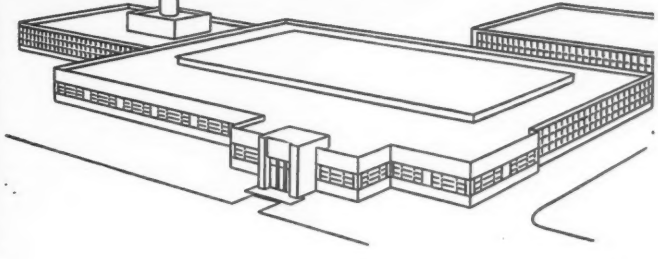
As to the necessity for more horsepower, most automobile people are no longer talking. Most know that a popular size car needs only 30 hp to be propelled at 60 mph along a level highway. Seven times that is certainly not required to take a 50 per cent heavier car up and down hills or to pick holes in traffic. Some observers are starting to leaf through their automotive history books to find out what happened to the Duesenbergs and V-12 powered cars which turned out more than 200 hp in the early 1930s.

Gas consumption in an economy-minded era probably killed them. Some other influence—not impossibly government regulation—might do the same to tomorrow's crop of super-powered cars.

Frictionless Flow in industry





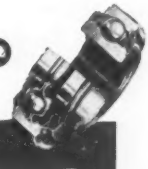


The "Sealed-for-Life" ball bearings originated by New Departure play a real role when materials are conveyed mechanically. Overhead or underground . . . carrying sand or steel . . . moving coal or castings . . . conveyor systems equipped with N-D Ball Bearings reduce handling costs.

With grease sealed in and dirt sealed out, these bearings resist loads of all kinds for years without adjustment. It is not unusual to find installations that were made twelve to fifteen years ago still in efficient, effective operation.

The Great Ball of New Departure symbolizes engineering excellence—and New Departure's application engineers and research facilities are always at your disposal. Keep your eye on the BALL to be sure of your BEARINGS!

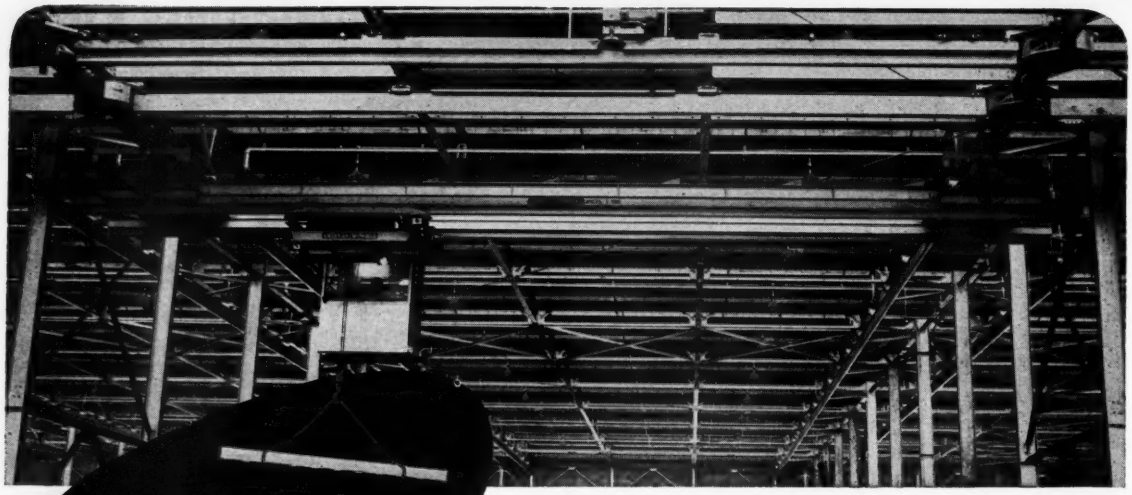
NOTHING ROLLS LIKE A BALL



NEW DEPARTURE

BALL BEARINGS

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT

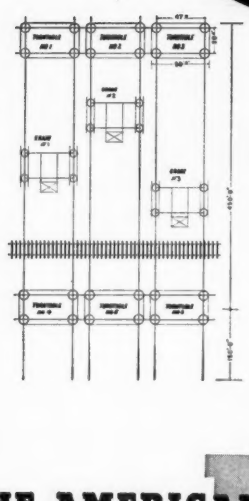


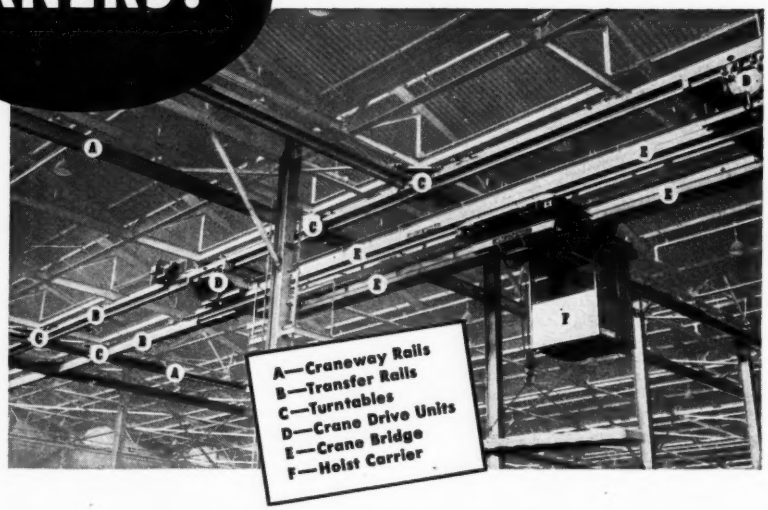
A CRANE that TURNS the CORNERS!

Imagine a crane that shifts from its craneway to another via 90° turntable—then shifts again at 90° to travel another craneway. It's like driving a car to the middle of an intersection, then instead of just the front wheels turning, all wheels turn at a right angle and the car travels sideways down the side street.

This crane offers fast hoist hook service throughout maximum areas without load transfer from original pick-up.

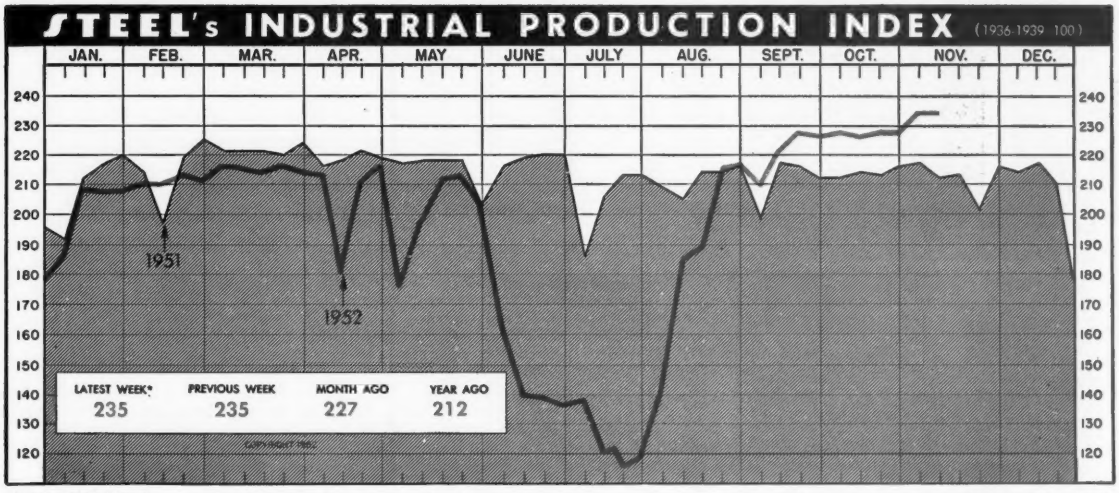
An American MonoRail engineer will gladly tell you now about its application.





THE AMERICAN MONORAIL COMPANY

13102 ATHENS AVENUE CLEVELAND 7, OHIO



*Week ended Nov. 8

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Ward's Reports) 20%.

Outlays for new production facilities may soon decline now that industrial construction is tapering off. Industrial activity index holds firm at record level

INDUSTRY may soon round the hump in expansion of production facilities. Declining outlays for industrial construction point to this.

Manufacturers this year spent about 11 per cent more on new facilities than in the same months in 1951. Outlays for industrial construction in 1952 climbed to $1.9 billion by Nov. 1, compared with $1.7 billion a year earlier, reports the Bureau of Labor Statistics. October expenditures, however, skidded 7 per cent under October, 1951, to $190 million. Materials shortages resulting from the steel strike can't take the entire blame for this decline, as residential and commercial building last month stood well above the high totals a year earlier.

Here's Why—Orders for machine tools and other industrial equipment have slipped off for nearly a year. Although backlogs for this equipment still are high, many purchasers set back delivery dates as the defense stretchout took hold. In turn, little pressure is being placed on many contractors to get new plants up in a hurry.

Lower High Level—This doesn't mean that construction activity will plunge. Our rate of industrial expansion is expected merely to edge down during the first half of 1953. On the other hand, another reshuffling of defense schedules by the Eisenhower administration or a quick change in the foreign situation, might again push up industry's production goals during 1953.

Index—As declines in steel and auto production balanced out increases in freight car loadings and electric power generation, STEEL's industrial activity index remained at 235 per cent of the 1936-1939 average in the week ended Nov. 8. This plateau is 23 points over the index for the week ended Nov. 10, 1951.

Auto Production Declines . . .

Automotive production, still near the high-for-the-year level, may coast downhill from now through the year's end. Dwindling steel supplies and model change-overs portend declining output. Production by U. S. plants dipped 5 per cent to 108,352 passenger cars and trucks in the week ended Nov. 8, estimates *Ward's Automotive Reports*. A large slice, however, is attributed to labor shortages on election day. But materials shortages, says *Ward's*, are now starting to hold down assemblies.

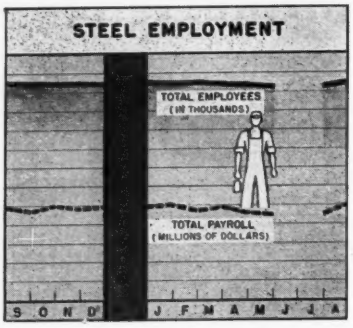
U. S. and Canadian manufacturers turned out 147,664 passenger cars and trucks in the week ended Nov. 8, compared with 155,037 units a week earlier. Output for this year stood at 4,634,900 passenger cars and trucks for the U.S., while Canada's total for 1952 on Nov. 8 reached 367,300 units. U. S. trucks passed the 1-million mark that week, a milestone met in August last year.

Steel Output Remains Heavy . . .

Taxing the nation's railroads, steel companies continue to pour and ship a heavy turnout. American Iron & Steel Institute estimates that 2,209,000 net tons of steel for ingots and castings were produced in the week ended Nov. 15. Output a week earlier totaled 2,200,000 tons steel.

Steel Wages Soar . . .

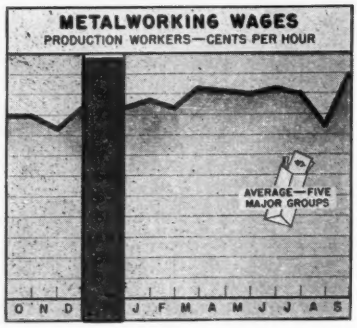
As the steel wage agreement took effect, average earnings in the iron and steel industry hit a record $2.139 per hour in August, says the American Iron & Steel Institute. Hourly earnings that month were 19.7 cents over February rates, the previous record. Steel



Steel Employment, Payrolls

	Employees in Thousands		Payrolls in Millions	
	1952	1951	1952	1951
Jan.	672	657	$252.2	$245.3
Feb.	674	663	234.9	219.4
Mar.	672	663	242.7	238.3
Apr.	670	666	225.6	234.8
May	662	667	223.1	249.0
June	*	674	*	240.7
July	*	678	*	231.9
Aug.	674	679	250.4	247.7
Sept.	...	677	....	236.3
Oct.	...	674	....	249.9
Nov.	...	675	....	242.0
Dec.	...	675	....	246.7

*Not available because of steel strike.
American Iron & Steel Institute

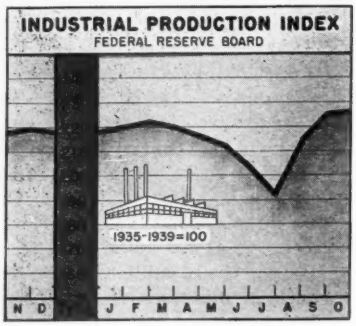


Metalworking Wages
(cents)

Production Workers—Five Major Groups

1951	Prim. Mtls.	Fab. Prod.	Mach-inery	Elec. Mchy.	Trans. Equip.
Sept.	183.5	168.2	178.8	164.5	188.4
Oct.	181.6	168.8	179.4	164.9	188.5
Nov.	181.9	168.9	170.7	165.5	189.2
Dec.	183.6	170.0	181.7	167.0	190.3
1952					
Jan.	184.7	170.3	182.0	166.9	191.4
Feb.	183.1	170.5	183.0	166.8	190.3
Mar.	184.8	171.5	184.1	169.5	193.4
Apr.	183.0	170.9	183.6	169.5	193.0
May	184.0	171.9	184.0	169.5	192.4
June	183.0	171.5	184.7	170.4	194.0
July	181.3	170.0	184.4	169.5	194.0
Aug.	193.7	172.4	184.5	171.6	194.8
Sept.	199.1	176.3	187.1	173.6	200.5

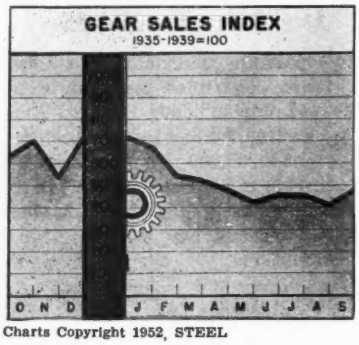
U. S. Bureau of Labor Statistics



Industrial Production Index
1935-1939=100

	Total Production		Iron, Steel		Non-ferrous	
	1952	1951	1952	1951	1952	1951
Jan.	220	221	261	255	215	224
Feb.	222	221	261	252	217	218
Mar.	220	222	262	263	218	212
Apr.	216	223	245	264	219	210
May	211	223	245	263	220	206
June	203	221	142	261	212	205
July	193	222	141	253	201	199
Aug.	215	217	241	254	212	198
Sept.	225	219	266	257	221	201
Oct.	226	218	...	261	...	202
Nov.	...	219	...	261	...	209
Dec.	...	218	...	263	...	210
Avg.	...	220	...	259	...	207

Federal Reserve Board.



Gear Sales Index
1935-1939=100

	1952	1951	1950
Jan.	670.6	764.6	280.2
Feb.	539.5	809.1	272.9
Mar.	517.1	830.7	358.4
Apr.	478.7	742.5	328.6
May	425.9	667.1	363.1
June	452.3	800.9	401.0
July	453.9	589.1	410.7
Aug.	413.9	564.2	617.4
Sept.	485.0	630.1	654.5
Oct.	....	703.4	564.8
Nov.	....	530.0	554.9
Dec.	....	716.5	680.4

American Gear Mfrs. Assn.

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction .....Oct. 20	Ironers .....Nov. 10	Ranges, Gas .....Oct. 13
Durable Goods ...Sept. 22	Machine Tools ....Nov. 10	Refrigerators ....Sept. 29
Employ. Metalwkg.Oct. 27	Malleable Castings..Nov. 3	Steel Castings ....Nov. 3
Fab. Struc. Steel..Oct. 27	Pumps .....Oct. 13	Steel Forgings ....Oct. 20
Foundry Equip.....Oct. 27	Prices, Consumer ..Oct. 20	Steel Shipments ...Nov. 3
Freight Cars .....Oct. 27	Prices, Wholesale..Oct. 20	Vacuum Cleaners..Nov. 10
Furnaces .....Nov. 10	Radio, TV .....Oct. 6	Washers .....Oct. 13
Gray Iron Castings.Nov. 3	Ranges, Elec. ....Sept. 29	Water Heaters ....Oct. 13

employment in August matched February by climbing to 674,000 workers. Total industry payroll passed the $250 million-mark, $1.8 million under the January payroll. AISI hasn't released employment and payroll estimates for the strike-bound months of June and July.

When steelworkers received pay boosts, wage increases started to fan out through the entire metalworking industry. The Bureau of Labor Statistics reports that hourly earnings in September rose 5.4 cents in the primary metals industry, 3.9 cents in the fabricated metal products industry category, 2.6 cents in the nonelectrical machinery industry, 2.0 cents in the electrical machinery industry and 5.7 cents in the transportation equipment industry.

TV Sales Triple . . .

TV sales zoomed as Ike and Adlai clashed. Radio-Television Manufacturers Association reports that dealer's television receiver sales in September were greater than the combined sales to the public in June, July and August. Dealers sold 875,290 units in September, compared with 700,490 TV sets to consumers in the preceding three months.

Store Sales Dip . . .

After rising above the year-ago volume for four consecutive weeks, department store sales in the week ended Nov. 6 plunged 5 per cent under sales in the comparable week in 1951. Store owners aren't worried that the drop will turn into a trend, for the week's decline probably resulted from election day.

Power Output Strengthens . . .

Breaking previous records for the month, electric power generation in September climbed 10 per cent over output in September, 1951. So says the Federal Power Commission, which reports also that the September power total declined 2.9 per cent under the generation peak set in August. Production of energy by utilities in September totaled 33.4 billion kilowatt-hours, compared with 34.4 billion in August and 30.3 billion kilo-

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	106.0	106.5	101.5
Electric Power Distributed (million kwhr)	7,780[1]	7,753	7,156
Bituminous Coal Output (daily av.—1000 tons)	1,535	358	1,889
Petroleum Production (daily av.—1000 bbl)	6,550	6,549	6,338
Construction Volume (ENR—millions)	$195.4[1]	$276.9	$159.5
Automobile, Truck Output (Ward's—units)	147,664	155,037	117,342
TRADE			
Freight Car Loadings (unit—1000 cars)	870[1]	862	791
Business Failures (Dun & Bradstreet, number)	143	136	150
Currency in Circulation (millions)[3]	$29,748	$29,540	$28,534
Dept. Store Sales (changes from year ago)[3]	−5%	+7%	+7%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$15,744	$17,561	$15,182
Federal Gross Debt (billions)	$264.9	$264.8	$257.8
Bond Volume, NYSE (millions)	$13.3	$15.5	$10.5
Stocks Sales, NYSE (thousands of shares)	6,632	5,980	6,041
Loans and Investments (billions)[4]	$77.0	$76.9	$72.6
United States Gov't. Obligations Held (billions)[4]	$32.4	$32.4	$31.9
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	181.31	181.31	171.92
STEEL's Nonferrous Metal Price Index[6]	214.0	212.6	234.9
All Commodities[7]	110.1	110.3	113.4
All Commodities Other Than Farm and Foods[7]	112.4	112.4	114.8

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1951, 1,999,035; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

watt-hours in September, 1951.

In the week ended Nov. 1, power generation reached 7.7 billion kilowatt-hours, says Edison Electric Institute. This is 5.9 per cent over the comparable week in 1951.

Truck Traffic Rumbles . . .

Industrialists clamoring for highway improvements have a new set of government estimates for substantiating data. The Defense Transportation Administration says that motor traffic volume is expected to remain high for the ensuing six months. After surveying commercial carrier firms, DTA says that 45 per cent of the firms expect to increase their traffic volume, 45.9 per cent say they will keep it about the same and only 9.1 per cent expect to use fewer trucks in the next half year. Carriers interviewed during the survey period (May-September) were operating 59,516 trucks, 76,569 tractors and 112,085 trailers.

Primary Prices Edge Down . . .

Wholesale prices are continuing their downtrend, despite wage increases throughout the nation. The Bureau of Labor Statistics reports that its wholesale commodity index declined 0.2 per cent to 110.1 per cent of the 1947-1949 average in the week ended Nov. 4. This marks a 3.1 point drop from the index average recorded for September, 1951.

Coal Output Swings Up . . .

The nation's output of soft coal swung quickly back when John L. Lewis called a pre-election truce in the miners' strike. The National Coal Association, from incomplete car loading reports from railroads, estimates bituminous production at a daily average of 1,535,000 net tons, 354,000 net tons under production in the corresponding week in 1951. The 1,535,000 tons produced marks a whopping increase over the 358,000 tons produced daily in the previous week.

Trends Fore and Aft . . .

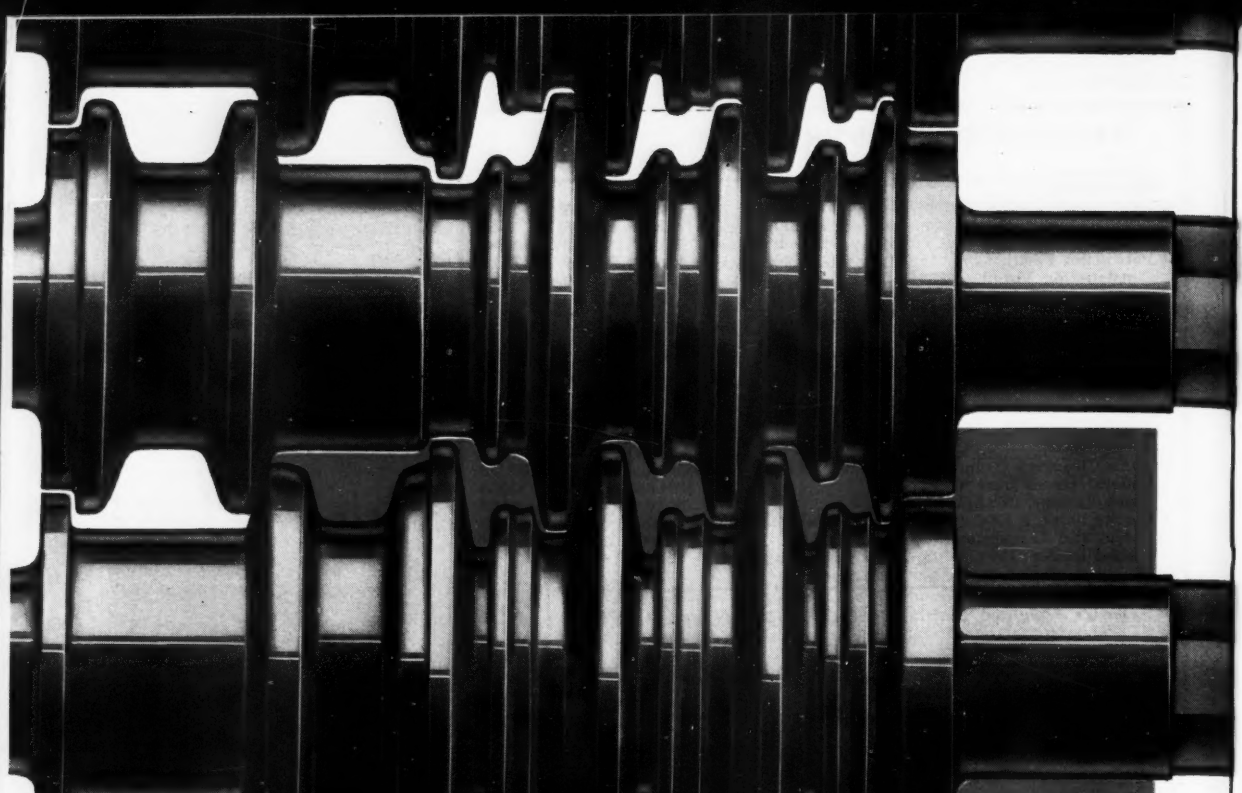
The New York Stock Exchange had the highest daily investment turnover in a year during a market rise following election day . . . Construction costs should feel little pressure until spring, says *Engineering News-Record* . . . Freight car loadings are continuing above a year-ago but under the same weeks in 1950 . . . Shipments of steel barrels and drums in September were down 8 per cent from September, 1951.

For Fast Dependable WAREHOUSE SERVICE

Rely on VIKING

- COLD FINISHED BARS—Rounds Hexagons, Flats and Squares
- ALLOY COLD FINISHED BARS
- HOT ROLLED BARS—Rounds Flats and Angles
- STRUCTURALS—Channels Angles and Beams
- HOT ROLLED PLATES
- ABRASION RESISTING PLATE
- HOT ROLLED AND COLD ROLLED SHEETS
- HOT ROLLED STRIP
- YOLOY PRODUCTS—Angles Flats, Plate and Sheets
- DEFORMED REINFORCING BARS
- WELDED WIRE MESH
- SOFT BLACK ANNEALED WIRE
- BRIGHT BASIC WIRE AND WIRE RODS
- WIRE ROPE AND FITTINGS

VIKING STEEL COMPANY
16700 St. Clair Ave.
CLEVELAND 10, OHIO
1003 Fisher Bldg., Detroit 2, Mich.



Ohio Rolls

SHAPING METAL FOR ALL INDUSTRY

STEPPED-UP PRODUCTION

Greatly-enlarged plant facilities at Lima mean more Ohio Rolls to enhance your production. Choose from 11 types of Ohio Iron and Steel Rolls:

- Carbon Steel Rolls
- Ohioloy Rolls
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- Holl-O-Cast Rolls
- Chilled Iron Rolls
- Denso Iron Rolls
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- Nioloy Rolls
- Flintuff Rolls
- Ohio Double-Pour Rolls

THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO • PLANTS AT LIMA AND SPRINGFIELD, OHIO

Men of Industry

R. E. METZGER
. . . CF&I mgr. of tubular sales

WILLIAM J. PINKERTON
. . . V. P.-mfg. at Micromatic Hone

LAMBERT M. KASPERS
. . . mgr. of RB&W's Coraopolis plant

R. E. Metzger was appointed manager of tubular sales for **Colorado Fuel & Iron Corp.**, Denver. The company reports this announcement as a preliminary step to operation of a new seamless tube mill at Pueblo, Colo., now scheduled to start production in the early fall of 1953. Mr. Metzger joined CF&I in 1945. In 1952 he was made assistant to the vice president.

William L. Killen was named general manager, **Chicago Steel Tank Division**, Pressed Steel Car Co., Chicago. He was named sales manager in 1951 shortly before acquisition of Chicago Steel Tank Co. by Pressed Steel. Named as sales manager of the division was **Edward A. Schiele** to succeed Mr. Killen.

A. O. Smith Corp., Milwaukee, elected **Fred Mackey** as a vice president. He recently resigned as vice president in charge of manufacturing of the general machinery division, Allis-Chalmers Mfg. Co., after 29 years with the firm.

Walter J. Morris joined **Tempel Mfg. Co.**, Chicago, and will work on its development and research program. He formerly was superintendent of silicon products at the Warren, O., mill of Republic Steel Corp. Tempel produces magnetic steel laminations.

William J. Pinkerton, formerly director of public and industrial relations, was promoted to vice president in charge of manufacturing at **Micromatic Hone Corp.**, Detroit. **Arthur B. Kowalski** assumes the position of factory manager formerly held by the late **Herman Thaler. Joseph Bolz** and **Glenn Rosene** were made division superintendents, and **Odiel Verhelst** is superintendent of afternoon operations. **Myron P. Ellis** was named advertising manager.

Harold Camp was elected to the newly created vice presidency in charge of finance, **Pitney-Bowes Inc.**, Stamford, Conn. **John O. Nicklis** becomes treasurer.

At **Reliance Electric & Engineering Co.**, Cleveland, **William C. McConnell** heads up ac motor sales. He is succeeded by **Robert B. Reed** as sales engineer operating out of the Detroit office. **Rex T. Willard** replaces Mr. Reed as sales engineer in Birmingham.

Louis G. Raiche was appointed works manager at the St. Charles, Mo., plant of **American Car & Foundry Co.**

Paul J. Isvolt becomes Cincinnati district sales manager for **Acme Steel Products Division**, Acme Steel Co.

Lambert M. Kaspers was made manager of the Coraopolis, Pa., plant of **Russell, Burdsall & Ward Bolt & Nut Co.** and **Aaron Evans** was named Detroit sales manager for the company. Mr. Kaspers replaces **Matthew L. Douglas**, retired, and Mr. Evans succeeds **Alfred Fairfield**, who also recently retired.

Elliman Steel Co., Detroit, appointed **Marvin E. Straub** assistant to the president in charge of steel procurement. He has been manager of secondary steel sales in the flat-rolled steel department of Youngstown Sheet & Tube Co.

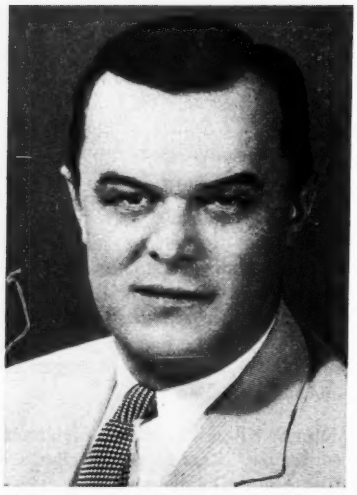
Charles W. Schreiber and **David C. Borlen** were elected vice presidents, **Yawman & Erbe Mfg. Co.**, Rochester, N. Y. Mr. Schreiber is in charge of sales, Mr. Borlen of manufacturing.

James H. Baldrey was appointed supervisor of melting for **Copper Alloy Foundry Co.**, Hillside, N. J. He has been at the Watervliet, N. Y., plant of Allegheny Ludlum Steel Co. for the last 18 years, and since 1939 served as manager of melting.

John S. Kline was named divisional controller, **Carpenter Steel Co.'s** Alloy Tube Division, Union, N. J. He formerly was auditor of Carpen-

ARTHUR J. TUSCANY JR.
. . . joins Arthur J. Tuscany Organization

NEIL A. MOORE
. . . new president, F. L. Jacobs Co.



R. D. HILL
. . . Taylor-Wharton exec. V. P.-treas.

ter's home office in Reading, Pa.

Arthur J. Tuscany Jr., for the last five years a staff executive in trade association work, has joined **Arthur J. Tuscany Organization**, Cleveland association management firm. During the war he served with the Air Corps in China, where, after cessation of hostilities, he instructed Chinese army officers in use of American electronic equipment.

A. F. Deegan was made manager of **Southern States Iron Roofing Co.'s** Memphis, Tenn., warehouse. He succeeds **Marion L. Peek**, transferred to Savannah, Ga. as supervisor for the company's 16 wholesale warehouses.

Neil A. Moore was elected president and a director of **F. L. Jacobs Co.**, Detroit. He recently resigned as a vice president of Federal-Mogul Corp.

Frank O. Riley was named director of commercial product engineering, Ternstedt Division, **General Motors Corp.**, Detroit. He succeeds **A. J. DeSana**, now engineering executive assistant to Ternstedt's general manager.

R. C. Boehm was appointed assistant manager for the appliance and heating divisions of **General Controls Co.**, Glendale, Calif. His office will be at the Skokie, Ill., plant. **B. L. Lerch** was made regional manager for the middle western territory, and **Russell Strongman** is regional manager for factory branch offices in Newark, N. J., New York, Hartford, Conn., and Boston.

R. D. Hill was elected executive vice president and treasurer, **Taylor-Wharton Iron & Steel Co.** Formerly at the executive offices in Cincinnati, he now will be located in High Bridge, N. J., responsible for coordination of activities and operations at the manganese steel foundry there and the forged steel cylinder and railroad trackwork plant in Easton, Pa. He continues his former responsibilities as chief financial officer of the company.

George A. Park was appointed to the newly created position of manager of distributor sales for **Norton Co.**, Worcester, Mass. He formerly was sales manager, eastern region. Eastern and central sales regions are now combined under **Donald L. Price** as sales manager, eastern region.

Rockwell Mfg. Co., Pittsburgh, appointed **E. W. Ristau** director of sales and advertising, and **John Stolarz** sales manager of the Delta Power Tool Division. Mr. Ristau joined Rockwell in 1951 and served as general manager of Rockwell Tools Inc. prior to assuming his new responsibility. Since 1951 Mr. Stolarz has been assistant sales manager of Delta Power Tool Division which comprises Rockwell Tools Inc., Deluxe Saw & Tool and Delta Tools.

E. M. Slonaker was elected executive vice president, **Willard Storage Battery Co. of California**, Los Angeles. He succeeds **Chester H. Starr**, retired after 36 years with Willard, 22 years of which he was executive head of the California subsidiary of Willard Storage Battery Co., Cleveland. Mr. Slonaker became vice president-sales for the California company in 1951.

Milton E. Trueman was appointed works manager of the Trenton, Mich., plant of **Chrysler Corp.**

M. R. Sturdivant was appointed general superintendent of aircraft fabrication and machining at **Kaiser-Frazer Corp.**, Willow Run, Mich.

James E. Pierce was appointed assistant manager of sales, hot-rolled products, **Jones & Laughlin Steel Corp.**, Pittsburgh, to succeed **Frank Davidson**, resigned.

Louis J. Sarosday was appointed vice president, engineering of **J. B. Beaird Co.**, Shreveport, La. He was formerly with Blaw-Knox Co.

Thomas F. MacLaren was appointed Chicago representative, **Brown & Sharpe Mfg. Co.**, to succeed **Howard K. Jackson** who was given special assignments by the home office.

W. W. Wood, chief engineer at **Link Aviation Inc.**, Binghamton, N. Y., was appointed vice president in charge of engineering.

Sigmund Toth was made shop superintendent, **Beatty Machine & Mfg. Co.**, Hammond, Ind., and **John Borkert** was made chief engineer.

Paul L. Tracy becomes comptroller

The Superior Tube That Keeps Cool in a Hot Spot

Cooling off customers' hot problems is a Superior specialty.

An example is illustrated above. The customer, Fenwal, Incorporated of Ashland, Massachusetts, manufactures THERMOSWITCH® industrial thermostats; Aircraft temperature controls, fire and overheat detectors; DETECT-A-FIRE® fire detectors. All of these products use stainless steel tubing. Before consulting with us an extra machining operation on the inside diameter was required. The tubing used needed a special temper for softness.

Problems like this one are tailor made for Superior. We produced for Fenwal a tube with a smooth, clean, almost mirror-like inside finish to eliminate the need for the extra machining operation. We were able to do this while still maintaining the low physicals necessitated by a stress cracking possibility.

What's more, the finished product was not a "specialty" tube. Our long experience in fine small tubing, backed by highly developed production equipment and extensive research and testing facilities enables us to produce tubing to the strictest specifications in large quantities. If you have a production problem involving the use of top-quality small tubing to do tough jobs well, check with us. We can probably supply you from the stocks of our distributors who are located in principal cities. Write for Catalog #20, Superior Tube Company, 2005 Germantown Ave., Norristown, Pennsylvania.

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Certain analyses (.035" Max. wall) up to 1⅛" O.D.

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Carbon Steels:
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Alloy Steels:
A.I.S.I.—4130, 4132, 4140, 4150, 8630, E-52100.

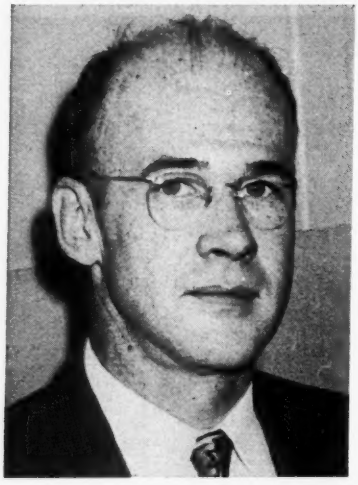
Stainless Steels:
A.I.S.I.—303, 304, 305, 309, 310, 316, 317, 321, 347, 403, 410, 420, 430, 446, T-S.

Nickel Alloys:
Nickel, "D Nickel"*, "L Nickel"*, "Monel"*, "K Monel"*, "Inconel"*, 30% Cupro Nickel.

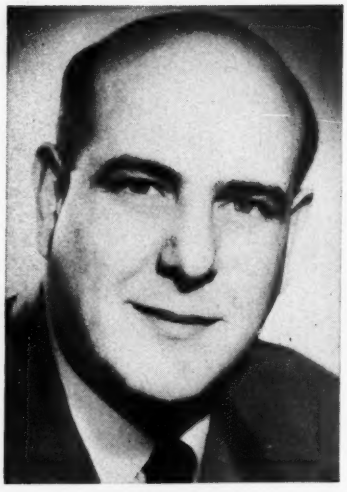
Beryllium Copper

[1]West Coast: Pacific Tube Company, 5710 Smithway, St., Los Angeles 22, Calif. UNderhill 0-1331.

*Reg. U. S. Trademark International Nickel Company



PAUL A. STEWART
. . . Maytag production mgr.



RONALD D. GUMBERT
. . . exec. V. P., Alloy Precision Castings

KENDALL B. ROWELL
. . . chief engineer, American Locomotive

and assistant treasurer, **Firestone Steel Products Co.**, Akron.

Paul A. Stewart, former production manager of Globe American Corp. at Kokomo, Ind., was appointed to the newly created position of production manager for **Maytag Co.**, Newton, Iowa.

John G. Steinebach, formerly a foundry engineer for Aluminum Co. of America at Detroit, joined the foundry department of **Borden Co.'s** chemical division with headquarters in Birmingham, Mich. He becomes Michigan sales representative for Borden's foundry products, including core and shell bonding resins and core pastes and sprays.

Jackson Kemper was appointed general manager, **Watson-Stillman Fittings Division**, H. K. Porter Co. Inc., Roselle, N. J.

George Peterson Jr. becomes director of aircraft sales, **Camden Forge Co.**, Camden, N. J. He formerly was with Riverside Metal Co. in charge of its special products division.

Ronald D. Gumbert was appointed executive vice president, **Alloy Precision Castings Co.**, Cleveland. Before joining the company he was production superintendent at the Pittsburgh plant of Armstrong Cork Co.

Truscon Steel Division, Republic **Steel Corp.**, Youngstown, appointed **D. M. Schmid** as assistant general manager of sales. He has been manager of sales, reinforcing products division since 1951. **C. L. Spatholt** succeeds to the latter position.

International Business Machines Corp., New York, appointed **Roger M. Bury** sales promotion manager. He previously was an assistant sales manager, electric accounting machine division.

Myron M. Hemmerdinger was appointed director of material at **Inet Inc.**, Los Angeles.

W. Harrison Lackey was appointed manager of plate sales, **Lukens Steel Co.**, Coatesville, Pa. He has been with the company since 1939.

Kendall B. Rowell was named chief engineer of **American Locomotive Co.**, responsible for product development and engineering at the locomotive division at Schenectady, N. Y.

H. E. Ehlers Jr. was promoted to assistant general sales manager, and **Ralph Rathyen** to manager, crucible and refractories division, **Joseph Dixon Crucible Co.**, Jersey City, N. J.

John N. Allen heads the recently opened Cedar Rapids, Iowa, office of **American Brass Co.**

Roger L. Fellows resigned from Chicago Vitreous Enamel Product Co. to become manager of the frit division of **Century Vitreous Enamel Co.**, Chicago.

A. C. Moore was appointed to the new post of general manufacturing manager at **Ford Motor Co.'s** aircraft engine division, Chicago. Since 1951 he has been general manager at Ford's tank division at Livonia, Mich.

OBITUARIES...

Paul B. Morgan, 83, chairman of the board of **Morgan Construction Co.**, Worcester, Mass., died Nov. 3. He was made chairman in 1941 and previously served for 30 years as president.

Leopold E. Block, 83, one of the founders of **Inland Steel Co.**, Chicago, died Nov. 11. He was chairman from 1919 to 1940 when he became honorary chairman.

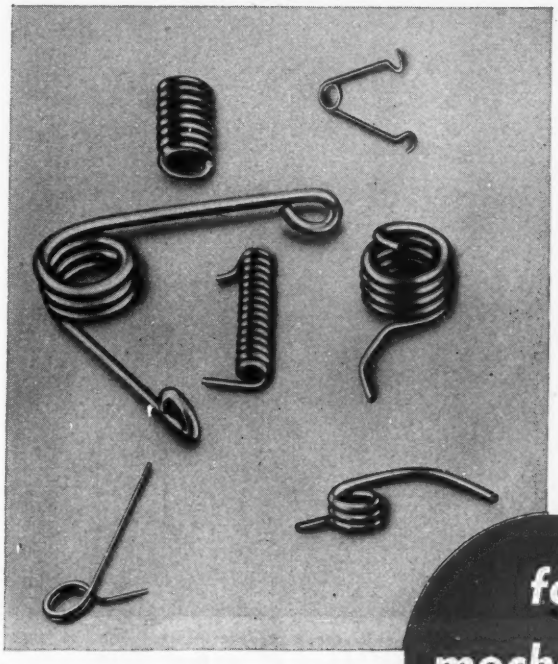
Walter M. Floto, 59, manager, merchant products division, **American Steel & Wire Division**, U. S. Steel Co., Chicago, died Nov. 3.

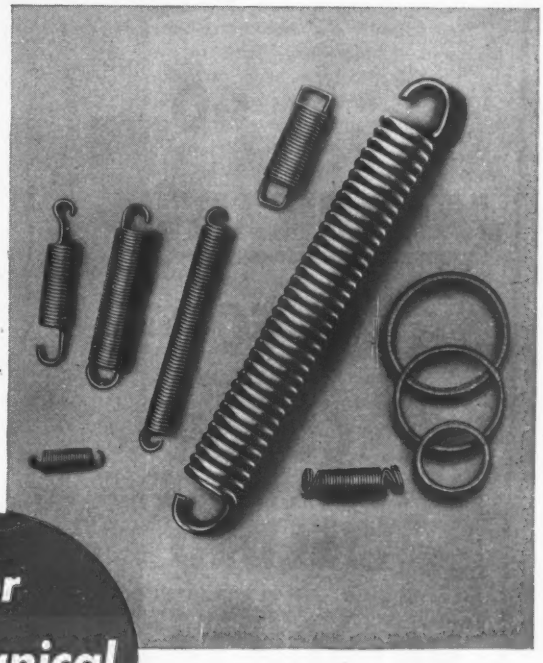
Robert H. Ellis, manager of the electrical, service and construction departments, **United Engineering & Foundry Co.**, Pittsburgh, died Nov. 1.

George H. Fobian, 57, president, **Oilgear Co.**, Milwaukee, since 1945, died Nov. 4.

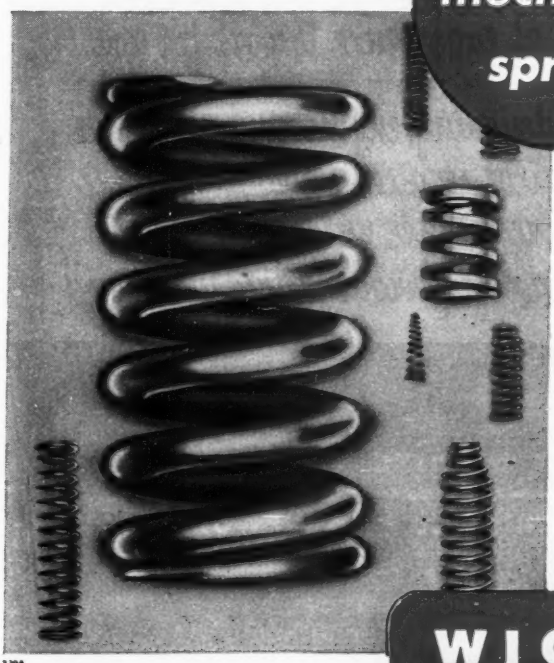
Robert J. Williams, senior partner in **Birmingham Rail & Locomotive Co.**, Birmingham, died Oct. 31.

WICKWIRE WIRE





for mechanical springs



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That's because Wickwire Wire . . . Hard Drawn, Spheroidized or Oil Tempered . . . is a product of long experience, skilled craftsmanship and completely integrated facilities starting with actual steel making. Thus, every step of its production is under constant and uninterrupted control, subject to thorough-going testing, checking and inspection.

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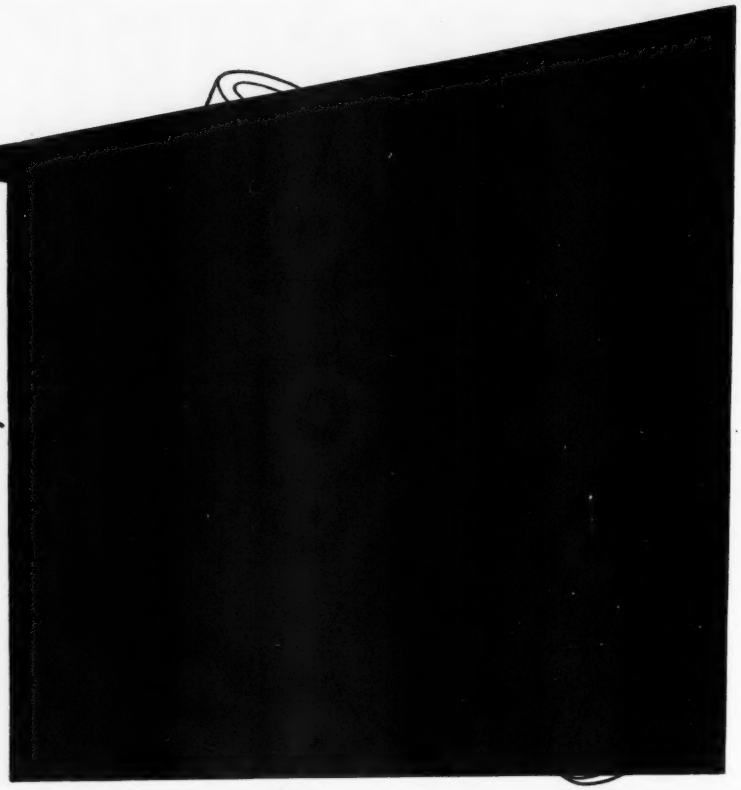

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Production AND Engineering
NEWS AT A GLANCE

HEAT'S NO PROBLEM—Gas turbine designers continue to call for stronger materials for use at temperatures above 1500° F. Molybdenum base alloys seem to be a good bet, if new problems inherent with their use can be solved. Main problem is poor resistance to oxidation. This problem has not been solved by alloying. Encouraging results are being obtained with glass and ceramic coatings and by siliconizing. Alloys of molybdenum hold promise for being as strong at 2000° F as the highly alloyed colbalt and nickel base alloys are at 1500° F.

NEW TOUGH IRON—A method for increasing tensile strength of iron six times and at the same time improving its machinability was reported to a Wisconsin engineering group by an Allis-Chalmers executive. The process involves adding ordinary salt and calcium silicide to get much the same effect as is achieved by adding magnesium.

LITTLE SHOPS TOO—Perhaps you've thought a quality control setup would help cut down rejects and pare costs in your plant and haven't followed through because your operation is small. This program isn't limited to the big operators. For example, a small foundry making chemical analyses, inspecting patterns or castings already has a quality control program of sorts in effect. To really put it on a paying basis takes little more in equipment and procedure but it does take an understanding of the problems involved plus co-operation from all levels of supervision. p. 86

TESTING TELLS—There is a difference in comparative reliability of control relays. Ralph Schumann, Warner & Swasey, told the AIEE machine tool meeting his tests indicate a substantial difference between brands in regard to life and service although all brands checked were the products of equally reputable concerns.

MACHINES ON THE MOVE—Whether or not you favor the machine tool reserves, you have to admit it's a big undertaking. Once the machines moved out of storage the job didn't end. Last week, for example, 500 machines were readied for the trip out of Ford's Chicago plant and back into mothballs, at least temporarily. Other moves involving a smaller number of machines are constantly underway, just like in an outsize general store.

TRANSPORTATION TRICKS—Building the extrusion and forging presses for the Air Force's heavy press program is only part of the story. Getting them to the press operators' plants presents additional problems. Best guess now is that 43 special cars will have to be built at a cost slightly below $2 million to transport the huge castings and forgings. A few king-sized depressed cars are already in service but more are needed. Some entirely new designs will be required to move other big sections that won't fit on the depressed cars for one reason or another. Add to these headaches the fact that transportation men will have to check every inch of possible railroad routes to assure adequate clearances even with special equipment. All this comes in fulfilling a contract that nonchalantly says, "The press builder will create no unusual transportation problems."

FOREIGN TOOLS—Do foreign machine tools represent a real problem to American industry or are they merely the answer to a present need? Both sides of this hot argument are presented by spokesmen for the American builders and the machine tool importers. At first glance complaints about imported machines while American plants have sizeable backlogs may seem to be much ado about nothing, but the effect of importations is concentrated on builders of general purpose machinery. Another angle is that the absence of sales abroad is undermining European sales outlets. p. 92

QUICK CHECK—A well established fact is that austenitic grain size in high quality steels depends on aluminum content. Tests at Timken Roller Bearing Co. prove grain size can be quickly determined by checking aluminum content of each heat spectrographically. Wet chemical analysis of steel for aluminum content was too slow to be practical. A direct reading spectrometer enables the company to get the complete chemistry on all heats within two hours after pouring and even before ingots are delivered to soaking pits. p. 96

EASY ELECTRODE SHIFT—An air-cooled welding torch designed by the Navy saves time in changing electrodes and doesn't require disconnecting gas and power lines. Torch is small and light, being made of insulating fiber and copper tubing. Switch from electrode angle of 180 to 105 degrees is made quickly by removing electrode holder, attaching angular tip to threaded connection.

THEY PREACH WHAT THEY PRACTICE — Machine tool makers all preach the advisability of an intelligent machine replacement program. They've learned from experience that a machine can be obsolete long before it's old. Sterling example is at Ingersoll Milling Machine Co., Rockford, Ill. Average age of their machines is somewhere around seven years. They've replaced machines whose age was much less than that. And over a period of years they have proved that it's paid off in dollars and cents.

Metalworking Outlook—p. 49 *Market Outlook—p. 171*

SMALL BUSINESS IN ACTION

By WILLIAM J. SOMMER
Metallurgist
Plainville Casting Co.
Plainville, Conn.

Quality Control:

IT'S IN THE REACH OF SMALL FOUNDRIES

Look at your inspection setup. If you're making chemical analyses, inspecting patterns, or castings, chances are you have basic elements needed to start quality control program

WITH THE foundry industry as a whole becoming more and more quality conscious and the larger companies setting up elaborate quality control programs, many smaller foundries are beginning to feel "let out." They feel they cannot afford to inaugurate separate quality control departments patterned after the larger organizations.

On the contrary, a small foundry can have a quality control setup and make it work effectively. If management of a small foundry will take inventory of what it has to work with, it will find it can have a quality control program that will pay off in better castings.

What's There — Whether you refer to it as such or not, each small foundry already has some quality control. If you are inspecting your castings, if you are making chemical analyses of your iron and taking sand tests, then these and other routine checks are all the beginning of a quality control program.

Before going into the organizing phases of setting up the program an important decision must be made —who is going to be in charge.

In a smaller foundry, one man must be responsible for quality control. Your metallurgist, with a practical knowledge of your operations, is the man best suited for this job.

Watch Your Choice — If your metallurgist is the melting foreman he is probably already a very busy individual. Then perhaps your inspection department, has the most logical man for the job. Your foundry superintendent, foremen, and production and scheduling group are all too interested in getting the work out and meeting delivery dates. If possible by-pass your standards department or time study men. Their chief concern is getting rate of production up and total costs down. The standard department is indispensable in working with the head of quality control, but the two departments should operate independently. In our company, we make use of our foremen. This means that the foremen must be as conscious of quality as they are of quantity.

The man you pick for the job should be responsible directly to the head of the organization. He must, then, proceed slowly and gain the confidence and co-operation of the foundry superintendent, the foremen, and the workers themselves. This is a mighty big order, but also mighty important for the program's success.

Where to Start—The best starting point, is the scrap pile. Maintain an accurate account of all scrap castings together with the reason for the scrap. The type of scrap record you keep is optional, but it should contain such pertinent data as date, customer's name, pattern number, total cast, total scrap, and a breakdown of the scrap. A form showing the scrap broken down according to a code is handy.

A careful analysis of the defects will certainly show you where your trouble spots are, and discussions with the various foremen concerning the ones for which they are more or less responsible will be a large factor in gaining their co-operation and good will.

When ready to strike out with an all-out quality control program, you have a good background of facts and figures with which to work. In our case, the work cast on Monday goes through the cleaning room on Tuesday and is shipped on Wednesday. Therefore, the scrap on Tuesday represents Monday's heat.

Casting Days Important— Whether your work follows this

Worker here is checking condition of pattern upon arrival

Nonconformities to pattern are found by inspector and reported

pattern is unimportant, but it is important to be able to determine on which day each casting was made. Together with your scrap report, maintain as accurately as possible a record of sand tests, metal analyses, pouring temperatures, etc. A composite chart of your sand properties and metal analyses will soon show how closely you are controlling them and a study of your defectives will show within what limits they must be held. A metal analyses chart is a valuable aid. It can include manganese, sulphur, or other elements if you are making alloyed irons. A good idea is to also record, beneath the chart, any change made in the charge when the points fall outside the prescribed limits. A record of sand test results may be set up in the same manner.

Regarding sand tests, permeability and green compression are sufficient. Total carbon and silicon with periodic sulphur, manganese, and phosphorus analyses will take care of metal analyses.

Chill Test a Help—The use of a chill test for your metal will augment metal analyses and will enable you to check your metal composition from ladle to ladle. To establish the proper chill depth for each type of metal you may produce, first requires a number of carbon and silicon analyses. These together with the corresponding chill depths measured, preferably in thirty-seconds of an inch, will soon give a range of chill depth for each iron.

Once the preferred chill depth is established, a bi-weekly or weekly chemical analyses, if you depend on an outside laboratory, will serve as a check on your chill tests. If you have your own laboratory, take more analyses by all means.

Hourly carbon and silicon checks are very valuable for good metal control, but if you have to send out a sample and wait a day for the result you had better learn to depend on your chill tests for control. Once the limits of your sand properties and metal properties are established you must take the necessary steps to see that they are maintained. If the man mixing the sand can take moisture tests and the melting foreman can take the chill tests, there is not too much of a burden placed on your normal personnel.

The Pattern Situation—In refining your quality control program, begin with the preparation of the pattern. The ideal situation, of course, is for the customer to consult you before making the pattern. This, unfortunately, is not always the way it is done.

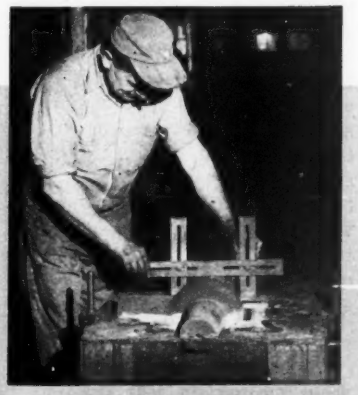
The type of pattern equipment will always be a matter of economics; we cannot expect metal equipment for an order of five or ten pieces. However, the feasibility of design changes toward more uniform section sizes, eliminating sharp corners, etc., can be discussed over the blueprint before a pattern is made and will lead to a better casting. Quite often orders for a certain item increase in quantity, and without realizing it, hundreds of castings are being made from a loose wood pattern.

Check the Customer—There is no better way to keep a customer happy than to tell him he can save $300 on an order if he will let you spend two hundred on new pattern equipment. He realizes you are on your toes, you wind up with better pattern equipment, your castings are more uniform, your scrap loss usually goes down and everyone feels better. To this end, all equipment should be checked for condition when an order arrives and not when the pattern is sent out to the foundry for production.

The customer should also be notified of any pattern in poor condition; if he wishes to proceed without repairing or replacing the equipment, you are relieved of the responsibility of poor looking castings. The checking of patterns is a job for the man in charge of pattern storage. He should report his findings to the head of quality control who will refer them to the proper authority.

Scheduling Cards Help — The next step is recording the order and the issuance of work cards. In our plant, we make an office, production, molding, core and if necessary, a shipping card. All but the office card go to the person in charge of scheduling. As the work is scheduled, he files the production card, and gives the molding, core and shipping orders to the respective foremen. The molding order contains pertinent data such as order number, quantity, pattern number, location of pattern, type of equipment, delivery date, etc.

The molding foreman now steps into the picture. Each job is checked against a record which is kept of each pattern made. Flask



Here worker is gaging a core for the proper wall thickness

This view shows how gage is made to fit over the pattern

The gage is shown here being used in setting of the core

size, height of cope and drag, metal specifications, size and number of gates and risers, whether or not chills are used, type of facing, number of weights, pouring instructions, and any special instructions are all listed on a card. If no card appears in the file, the pattern must be ordered to the pattern shop where it is reviewed by the foreman and the foundry superintendent. The proper gating and risering must be applied and the metal specification must be established. It might be well to have your metallurgist in on the metal specification, and he might even be very helpful on gating.

Information a Must — The core room foreman should have a record of each job requiring a core. This record should indicate the type of sand to be used together with number and placing of rods or wires and any special instructions concerning venting, handling procedures, or anything else pertinent to the making of each particular core. The core room foreman should be responsible for the sand mixes and properties used in the various cores.

Specifications should be set up by the head of quality control, or, at least, be set up with his knowledge and approval. A record of these specifications should be made and the core room foreman should see that they are adhered to. This same rule concerning sand specifications also applies to the molding department.

In the melting department, the primary duty of the melting foreman is to melt and deliver iron. He must see that the cupola is properly lined, that proper amounts of various materials are placed in the cupola, that ladles are lined properly, and that required amounts of the various irons are delivered at specified times. He should keep accurate records of time of light-up, time wind is on, time and amount of first tap and the succeeding taps.

Don't Overlook Any Figures— Some means of measuring air input and pressure should be incorporated into your air supply and these figures also recorded. An air-weight control with an automatic recorder and an automatic pressure recorder are two important factors in good cupola control.

In addition, chill tests should be taken on each ladle. The foreman need not do this personally, but the responsibility of its being done should rest with him. Temperature readings should be taken with an optical pyrometer at specified intervals, unless the temperature falls to a danger point which you must establish through experience with your own type of castings. Here, the assistance of your quality control man will be needed to help take more frequent readings and, at the same time, ferret out and remedy the trouble. Specifications for raw materials should be the responsibility of your quality control man.

After pouring the castings, it only remains to shake them out, clean them, inspect them and ship them. The cleaning room foreman must consistently watch for poor finish, excessive fins, shifts, strains, signs of shrinkage, etc. which he should take up immediately with the quality control man, who, in turn, will trace it back to the responsible department.

Keep Responsibilities Clear — The inspector, too, will watch for nonconformities to pattern and will report to quality control, or, if he is your quality control man, will take the trouble back to the responsible foreman. Inspection should be the last step before shipping and nothing but quality castings should ever reach the shipping platform.

The responsibilities of each foreman regarding quality should be outlined and any deviation from standard should be taken up with the head of quality control. The head of your quality control must answer directly to the head of the organization. He must, in the final analysis, have the authority to make and instigate changes in manufacturing procedures.

It is important that any change be made as a suggestion and thereby gain the co-operation of the foreman in whose department he is making it. However, if diplomacy fails, he must have that authority to fall back on.

The quality control man is the filter center for all the records from the various departments. It is his duty to assemble, correlate, and analyze the record of each day's operation. He must report each deviation from standard procedure to the responsible person and see that it is corrected. Further than that, all customer complaints should be relegated to the quality control head for investigation and correction.

Customer Troubles End Too— After the duties of the various foremen are outlined, the various sand and metal test limits established, and records of operation are being kept in good order, your quality control man will develop into a trouble shooter. This means both in your plant and in the customer's plant.

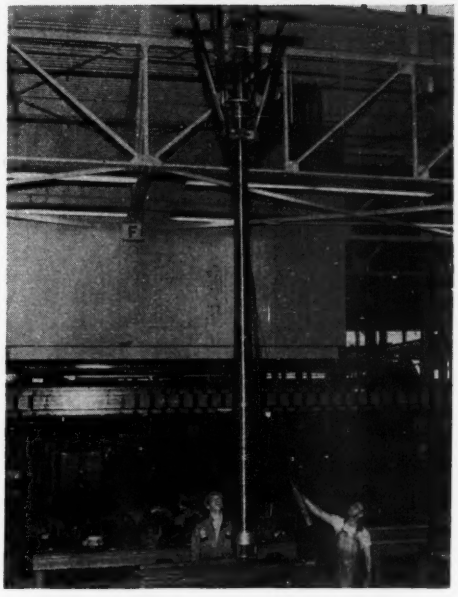
One thing always found true is that when your own foundry losses decrease, the rejects from the customer follow the same trend. Thus, the more time you can spend correcting your foundry problems the less the customer will ring that phone with a complaint.

In reducing foundry losses, first, ascertain just how bad your losses are. Set a goal a little lower and then as you reach it and hold or better that mark a few months, reduce it again. From your scrap records, determine which jobs are your highest scrap producers, and work on as many of these as you can.

The foreman's part in the program includes making the worker quality conscious. This might be accomplished by incentives for quality work or penalization for poor work. However, most workers pride themselves on a good casting, and making a little better showing than the man next to them.

Your quality control program can be just as extensive as you can afford to make it. The organization just outlined will work. How well it will work depends on amount of time and personnel available and the personal characteristics of the supervisors themselves. Best way to determine how much you can afford is to convert into dollars and cents what it would mean to convert 1 per cent of that possibly 7 or 8 per cent scrap loss into saleable castings.

From paper presented before the 26th annual meeting of the Gray Iron Founders' Society, Cleveland, Oct. 16-17, 1952.

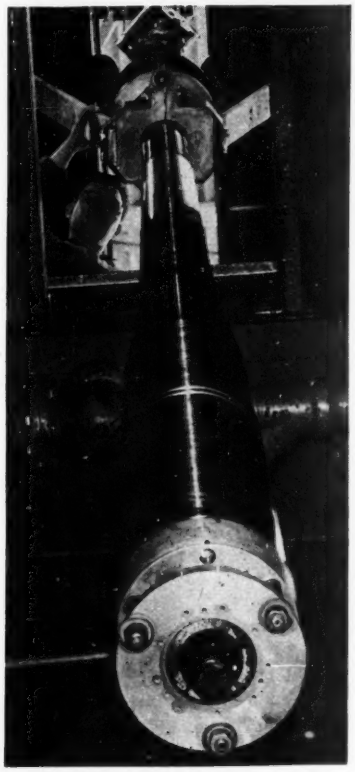


Gun tube here is being raised from the plating tank following completion of electrolytic process. Plating cycle takes as long as 4½ hours

Bright plated rifling of the gun tube is evident. Employee is gaging outside diameter of tube. Plated inner surface resists wear better, increasing accuracy

MORE ROUNDS PER BARREL

Volume Plating Method Increases Gun Tube Life



Subterranean view of Army's 90 mm gun tube being lowered into plating tank. Anode is inserted in muzzle end

GUN BARRELS now last longer. They fire more rounds of ammunition with less frequent replacement, thanks to a new volume production method of plating the bores.

Working with Army Ordnance engineers of Watervliet Arsenal, and applying their knowledge gained in automotive applications, engineers at Oldsmobile Division of General Motors came up with a mass-production technique for plating the gun bores of 90mm gun tubes to a fine tolerance. The method transforms the spiral rifling of the cannon tubes to mirror-like smoothness that resists wear better.

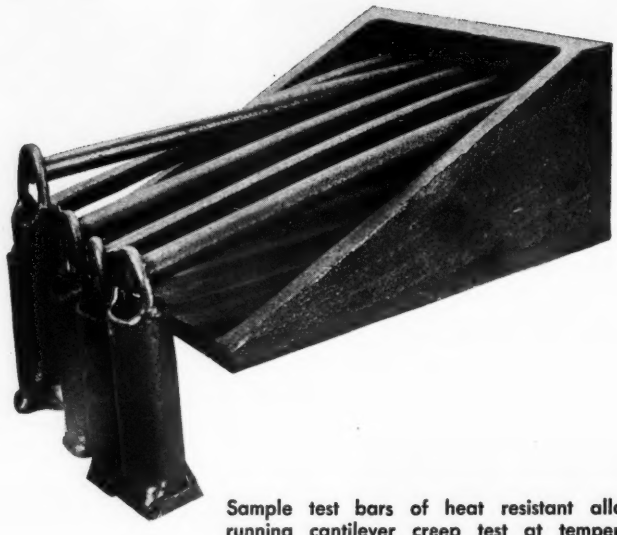
Four-Hour Job—To do the job, Oldsmobile engineers designed a new electrical system, the 30-foot pit for solution tanks and control machinery and the supporting structure. In the operation, a 15-foot gun tube is lowered into the pit and the anode for the electrolytic process is inserted at the muzzle end of the tube. Temperature of the plating solution is regulated carefully, the plating cycle taking up to 4½ hours for completion.

J. F. Wolfram, vice president of GM, says five preliminary steps assure a completely clean gun bore and an accurately fitted anode. The technique, he says, was developed from scratch last year and materialized into a full-scale volume operation in a period of only five months.

Even though in operation, some of the specialized engineers remain in the production picture at the installation. Chemical engineers constantly check on the efficiency of controls and apparatus, while others supervise maintenance.

NEW ALLOY TOUGH IN THE HOT SPOTS

Shows high strength and oxidation resistance at 2200° F. Field testing in furnaces and other hot applications is proving its dollar-saving possibilities; demand is increasing



Sample test bars of heat resistant alloys after running cantilever creep test at temperature of 2200° F and 500 psi. NA22H had least deflection

LIMITATIONS IMPOSED upon many high temperature processes, by the oxidation and creep rates of the available commercial heat resistant alloys, have long been the thorn in the side of furnace manufacturers and other users of such alloys. Engineers and designers sought to improve quality and economy of their processes by increasing the rate of heating with the use of higher heat heads. Until recently, however, these efforts were stymied—there just wasn't an alloy that could stand up under temperatures over 2000°F.

Recognizing this fact, M. N. Ornitz and R. H. English, works manager and chief metallurgist respectively, National Alloy Steel Division, Blaw-Knox Co., developed a heat resistant alloy that permits practical engineering applications at temperatures up to 2200°F. The alloy, called NA22H, was described in a report given to the Association of Iron & Steel Engineers.

Their problem was twofold: Strengthening the Ni-Cr-Fe base alloy which is excellent up to 1900°F and developing sufficient oxidation resistance in connection with these strengthening elements. Without proper chemical balance to form a tight adherent oxide scale, the additions of such strengthening elements as molybdenum and vanadium and certain ranges of chromium and tungsten result in a porous oxide which accelerates the oxidation of the alloy.

Wanted: New Test—The large number of samples that had to be tested in a research project of this magnitude made it imperative that a new, reproducible and inexpensive procedure be developed to test creep and oxidation resistance simultaneously, and at temperatures up to 2300°F. Such a system was devised several years ago.

To an angle-shaped, heat-resistant fixture were fastened the test samples — bars approximately 11 inches long and ½-inch in diameter—in cantilever fashion. Heat resistant weights were added to the free end of the bar to vary the stress as desired. Test holder and specimens were placed in a gas-fired muffle furnace which has full proportioning control capable of holding the temperature to plus or minus 2° F up to 2400° F. A traveling microscope read the deflection at the various test temperatures.

Analysis of the NA22H used in the test showed 0.44 carbon, 26.3 chromium, 46.0 nickel, 1.36 manganese, 0.99 silicon and 5.28 tungsten.

Mechanical Properties — Test data showed that the short time tensile strength of NA22H is superior to that of the standard commercial heat resistant alloys at temperatures of 1600 to 1800°F. Data was taken up through 2300° F, but similar values for other alloys are not available, so no comparison was possible.

While the room temperature elongation and reduction of area for NA22H is not high, this has not been a detriment in the casting, welding and handling of this alloy. The ductility is well within the necessary practical range.

Tensile creep and stress rupture properties of NA22H were evaluated for the temperature range of 1800-2300°F in 100 degree intervals. A straight line relationship was found to exist between stress and both the creep rate and the rupture time. No change in slope was evident in any given curve.

Marked Superiority — Early in

the experimental work, cantilever creep testing revealed that NA22H, in comparison with commercial alloys, had greater resistance to creep. This was shown by two cantilever beam tests, one run at 2000°F and the other at 2200°F under loads producing maximum fiber stress of 1750 and 500 psi respectively.

It was noted in the first test that not only did the four commercial alloys have a much higher minimum rate, but that they also had a very short steady state, usually referred to as stage 2 (see graph at right).

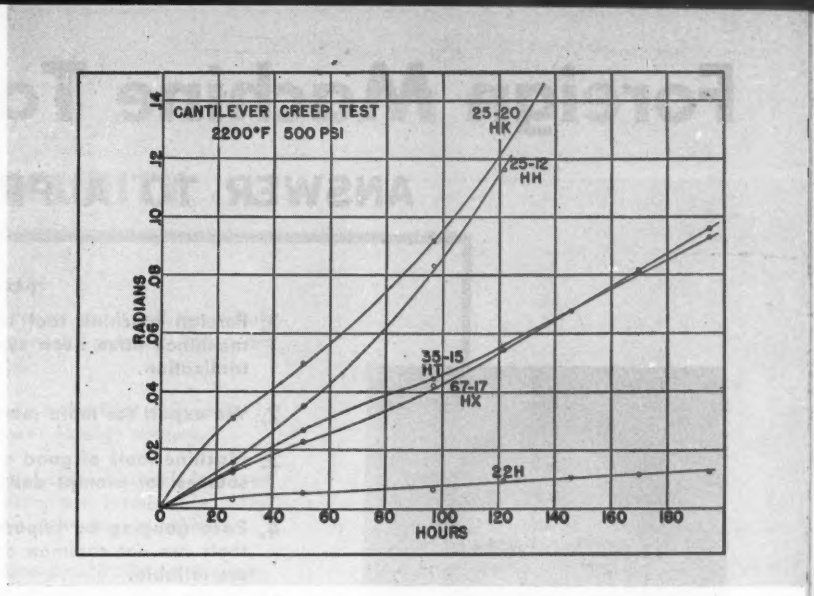
Apparently these alloys entered very rapidly into stage 3, i.e. an increasing rate of bending. Alloys tested were: HH(25 Cr-12 Ni), HT(35 Ni-15Cr), HK(25 Cr-20Ni), HX(65 Ni-18Cr) and the NA22H sample.

The second test, run at 2200°F and 500 psi illustrated the further shift in strength between several of the commercial heat resisting alloys at a temperature 200 degrees higher. Again the superiority of NA22H was illustrated in this unique type of testing.

Oxidation Nil—Results of the oxidation tests under static non-cycling conditions is not always a proper means of evaluation. Under cycling temperature conditions, many normal heat resisting alloys will have a tendency for their protective oxide scale, so necessary to long alloy life, to spall or crack resulting in accelerated corrosion. The 500 hour cycling test at 2200° F was obtained by heating samples 21 hours at 2200°, cooling to 800° and reheating back to 2200°. The cycle was repeated every 24 hours, and the specimens were at 2200°F a total of 500 hours. Cycling had only a slight effect upon the NA22H.

Thermal Expansion—This property of NA22H was determined over the temperature range of 100 to 1850° F. Results obtained show that the expansion values of the new alloy are slightly lower than those of the other alloys.

Weldability Excellent—This alloy has excellent welding characteristics, the report claims. Cast rods of the same analysis as the parent castings are coated with a special low hydrogen coating and



Time-deformation curve for cantilever test at 2200° F and 500 psi stress. NA22H was the only alloy showing straight line relationship throughout

welded with direct current reversed polarity. No preheat is necessary in welding thin walled cast forms; low heat input and frequent stress relieving by peening may be advisable for heavier sections of intricate shape. Tests show the weld to be equal in high temperature properties to the parent metal.

Thermal Ups and Downs—While the property of thermal fatigue has not been thoroughly evaluated, tests have withstood 250 cycles—heating to 2000° F and cooling with CO_2 or air to 150°F once each hour —without sign of fracture. Results show that the alloy is equal to the common commercial alloys.

Applications Growing — One of the first applications was the installation of 44 radiant tube assemblies in a continuous furnace for the annealing of strip at extremely high temperatures. Installed in February 1947, 33 of the original tubes are still in service, and none of the 11 tubes removed from the furnace were for failure of the alloy.

Another application of this material has been in the fabrication of retorts for endothermic gas generators. Use of NA22H permitted operating temperatures to be raised from 1850°F to 2050 and 2100°F, which produced up to 60 per cent more gas without increasing the size of the generator. In addition to increased capacity, the higher temperature produces a more uniform gas.

In a continuous tube annealing furnace operating at a product temperature of 1800°F, NA22H tubes have been in service 29 months and are still reported in excellent shape. Average life of previous tubes was approximately 17 months.

Save Three Ways — Three-way savings are reported with the use of NA22H radiant tubes in an existing continuous strip processing line.

They are (1) the increased production due to the use of a higher heat head, (2) use of less alloy operating at a higher temperature, and (3) economy in operation due to lower maintenance.

Bars for supporting baffles in a steam super-heater were averaging 3 months service before sagging badly and shifting the baffle plates. In 1948, NA22H bars were substituted and they are still in operation.

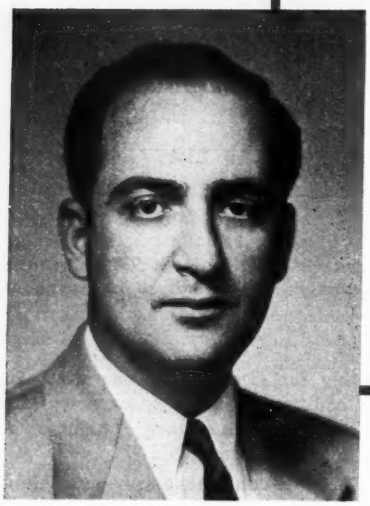
Other applications include cast fans in closed muffle type furnaces, two-roller hearth furnaces for heat treating diaphragms for jet engines, soaking pit burners, pier caps and rails in rotary furnaces, roller rails, trays, work supports and hearth plates.

Foreign Machine Tools

ANSWER TO A PRESENT NEED . . .OR

FOREIGN

1. **Foreign machine tool imports are not new. European machines have been synonymous with American industrialization.**
2. **We export far more machine tools than we import.**
3. **Machine tools of good quality are available from foreign sources for prompt delivery.**
4. **Price gouging by importers and poor service on foreign tools are not common complaints. Most importing firms are reliable.**
5. **Appeals by American builders to government for protection not only would be inviting further interference with private industry, but also would shut the door to healthful foreign competition and hurt foreign markets.**



By RALPH M. KOVEL
President
Case International Co.
Cleveland

CONCERN is being expressed as to the number of foreign-made machine tools that have been imported into this country. Some people would lead us to believe that this policy is something new and that it is endangering the American machine tool industry. Such is definitely not true.

Foreign-made machine tools have always been synonymous with American industrialization. At the present time, large numbers of such equipment are answering the need in the Canadian and Latin American booms. Typically famous foreign names have always been Brown Boveri, AEG, Sulzer, Collet and Engelhart.

Actually then, the use of foreign-made machine tools is not new. Let us also examine the relationship of imported goods to the American machine tool industry.

Minor Importance — Interesting importing-exporting figures for the year 1951 definitely dispell any fears of excessive imports of machine tools. Here are the facts. According to report FT 110 ("United States Imports of Merchandise for Consumption") issued by the Department of Commerce, $13,706,649 worth of machine tools were imported in 1951.

During the same period, (according to report FT 410), a total of $187,595,000 of machine tools were exported by the United States. This means that more than 13 times the amount (in dollars) of machine tools were exported in 1951 as were imported.

It is obvious that such a ratio does not spell a disaster for American machine tool manufacturers. In fact, we exported more machine tools to Canada alone than we imported altogether.

Going Overseas — There is a strange paradox in today's international machine tool picture. Even while certain tools are in very short supply in this country, these same tools are being shipped overseas in appreciable amounts. Some of this equipment, of course, is being sent as part of the Marshall Plan and Mutual Aid Program.

At the same time that U. S. machinery is going abroad, a small percentage of similar equipment is being sold back to this country. In fact, much of this equipment is being produced on American machine tools. Why?

As we all know, at the end of World War II, European industry was almost nonexistent. In an effort to aid in the rebuilding of European economy, it was vital that the United States send the absolute necessities of any industrial expansion—machine tools—to these countries. In addition to the equipment itself, advanced technology has brought foreign production to new highs. Prewar quality has been surpassed in most cases—prices are comparable to U. S. equipment—but on the average, delivery has been the major factor in the importing of these vitally needed machine tools.

Basis For Importing—Since U. S. machines were rushed to fill the breach in European economy, some shortages developed in this country, particularly because of our in-

(*Please turn to Page* 104)

. . .OR THREAT TO SECURITY . . .

AMERICAN

1. **Dollar totals on imports and exports don't tell the whole story. Domestic builders of general purpose tools are being seriously hurt by imports.**
2. **Import duty of 15 per cent does not offset difference in manufacturing costs, due to lower foreign wages.**
3. **Barriers to American machine tool sales abroad, imposed by U. S. and foreign governments, are formidable. The door often is shut to competitive American machines.**
4. **European machine tool plants are practically on the battlefield. It would be foolhardy to rely on their capacity.**
5. **Since machine tools are vital to our defense, how far is it wise to go in reducing our capacity to foster mushroom growth of production abroad?**

By TELL BERNA
General Manager
National Machine Tool Builders' Association
Cleveland

COMPARING machine tool export and import dollar totals is misleading. Commerce Department figures on imports of machine tools in 1951 show a total of $13,703,655 with a considerably higher export figure. But—the machine tool export figure for 1951 includes accessories such as parts and chucks, canmaking and other forming machinery, rolling mills, foundry equipment, die casting and portable machines. These are not included in the import total. Exports of machine tools were actually $67 million. The ratio is about five to one, not 13 to 1 as a look at Commerce export and import totals would indicate.

The foreign market has been of importance to United States machine tool builders for many years. During the depression of 1932, sales to overseas customers were of critical importance to many machine tool companies. In the depression year of 1938, 44 per cent of the industry's production went overseas. Over a period of twenty years overseas customers have taken about 25 per cent of the annual output of the industry.

Falling Fast—Yet in 1951, new orders from foreign sources were only 10.9 per cent of the industry's total sales. For the first 8 months of 1952, they have fallen to 6.7 per cent.

At the same time, imports of foreign machine tools which historically have amounted to about $1 million a year are now at the level of about $50 million. They have increased sharply since 1951. In contrast to the domestic industry's total output of about $1100 million in 1952, this seems small, and at first blush should give no concern.

On further analysis we find that the machine tools being imported are almost entirely what we know as standard general purpose machines. Europe does not produce many of the types made in the United States. The effect of these importations is therefore concentrated on part of the American industry. The volume of imports is far more serious than it seems.

Weakness Dangerous—The matter is of importance to the companies who are directly affected and to their employees, for obvious reasons. It should be of even greater concern to every American citizen because the American machine tool industry is the very foundation of our defense, and because we have found out, not once but twice, that we can not have an effective defense effort without the production of very large numbers of new machine tools. If this industry loses 25 per cent of its normal market it will have 25 per cent less capacity for the sudden and enormous needs of war. An industry already too small will be 25 per cent smaller.

While special machine tools can hardly be designed and built overnight, standard general purpose machines can usually be adapted to start production of weapons while the special machines are built. Yet the expansion of the European machine tool industries destroys completely the usual European market for such machine

tools and their importation into the United States reduces the domestic market, so that this sector of the American industry is seriously affected.

There is general agreement in overseas countries that the United States machine tool is pre-eminent. It is better designed, built of better materials, has more power, produces faster, and stands up better than its overseas competition. It gives the buyer the lowest cost per piece, which is to him the most i m p o r t a n t consideration. Why should the American builder fear the loss of his foreign market?

Postwar Build-up—It has been the policy of ECA and its successor organization, MSA, to build up European productive capacity — Congress told them to do it, and they have done it. They have had the co-operation of all of the European countries, who clearly understand the importance of a healthy machine tool industry in peace and in war. The net result has been to build up in European nations industries that are larger than they have ever been in past years, and to establish many companies that can not hope to survive in the post-defense normal market. These companies will promise any delivery date the customer asks for, and will quote whatever price that will get the order.

They do not have to conform to the Walsh Healy Act, the Fair Labor Standards Act, or the requirements of CMP.

Unfair Advantage—Except that imported machines are reported to the National Production Authority, they are not controlled by the regulations of that body. European wage rates are very low, and in many plants the workers do not get time-and-a-half for overtime. The hours are long.

Machine tool plants in Germany were first stripped by the Russians, then re-equipped under the Marshall Plan. They have the finest equipment available.

There is no barrier to their importation into the United States, except a 15 per cent duty. This is as low as the Administration can make it under the Reciprocal Trade Treaty procedure, and does not offset the great difference in manufacturing costs between the United States and Europe.

It's Really Tough—When the United States machine tool builder tries to sell abroad, he faces many barriers. His price is very high, and in the present inflationary spiral it threatens to go higher. His delivery date is uncertain, for the National Production Authority can divert the machine to a defense contractor, and this condition will of necessity persist until our defense program is finished. He must secure an export license, and that takes several months—please note that—several months go by before he can safely enter the order. His European customer can order an European machine by phone in 5 minutes.

His European customer has plenty of trouble if he prefers an American machine. His government will not let him have dollars unless the machine is of a "type or kind" not made in his own country, and not made in England or on the continent. The interpretation of what constitutes the same type or kind is made by a government official who never saw a machine tool.

Dollars Aren't All—There is no dollar shortage in Switzerland or in Australia but a machine of a type or kind made at home is just not admitted to those countries. No 15 per cent duty—the door is shut. In the member countries of the British Commonwealth, the machine must be purchased in the Commonwealth, or from Europe—or not at all, unless it is for the defense program. The machines for the NATO defense program have now been ordered, with only a few remaining exceptions.

To secure orders in foreign countries, the American builder must develop foreign distributors. These distributors must have the technical background to translate circulars, catalogs, quotations and instructions into their own language. Their men have to spend a year or two in the American plant to become thoroughly familiar with the construction and operations of the machines. They must not only sell, they must be able to install, tool up, demonstrate and service them. When such distributors go through an experience like that of the first six months of 1952, the pressure on them to drop the American product in order to sell European machines is very great. They can not live on hope.

Order Clamp-Down—In the first six months of 1952 not one machine tool order from overseas could be given a priority, unless it was for defense. At that time it would have been illegal to schedule or ship such an order without a priority. Even though required for an essential purpose, even though no Marshall Plan funds were involved, even though that type of machine was not in short supply in our own defense program, the answer was "no." Millions of dollars in such orders accumulated.

In other words, the European defense need could be taken care of. That is a short-term market. But the industrial customer was being pushed into the arms of foreign builders. The Mutual Security Administration office in his country "suggests" it, his own government insists on it, Washington holds up the mere entering of the order for several months by delaying the export license.

It is a wonder the American industry has any European distributors left.

Is This Smart?—If Russia suddenly attacks us, the European machine tool plants are on the battlefield. The western boundary of Russia is now 50 miles west of Berlin. Can we rely on them to produce the machines we will need? Can we bring those machines 3000 miles in time?

I have not heard any machine tool builder suggest that imports be blocked, as our machines are blocked again and again in foreign countries. No one has asked for an increase in our duty on machine tool imports although it is lower than the duty on American machines in many countries. It is fair to ask, however, in view of the role that our machine tool industry must play in the defense of all that we hold dear, just how far it is wise to go in reducing our own capacity in order to foster the mushroom growth of machine tool production abroad.

This situation not only endangers a great many companies in the U. S. machine tool industry, it endangers the nation itself.

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Ductile Iron
for
INTRICATE CASTINGS

Intricate fire-control housing cast in DUCTALLOY

QUALITY CONTROL
Every casting is represented by test bars, the physical properties of which meet or exceed minimum specifications.

DUCTALLOY, the new cast iron, combines high tensile strength with good fluidity. These qualities make it particularly valuable for intricate castings that would be difficult to cast in steel, but would not be strong enough in gray iron.

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Strength, toughness, machinability and many other desirable qualities make DUCTALLOY an exceptionally useful and economical material for a wide range of applications. Write today for information about its many possibilities and advantages.

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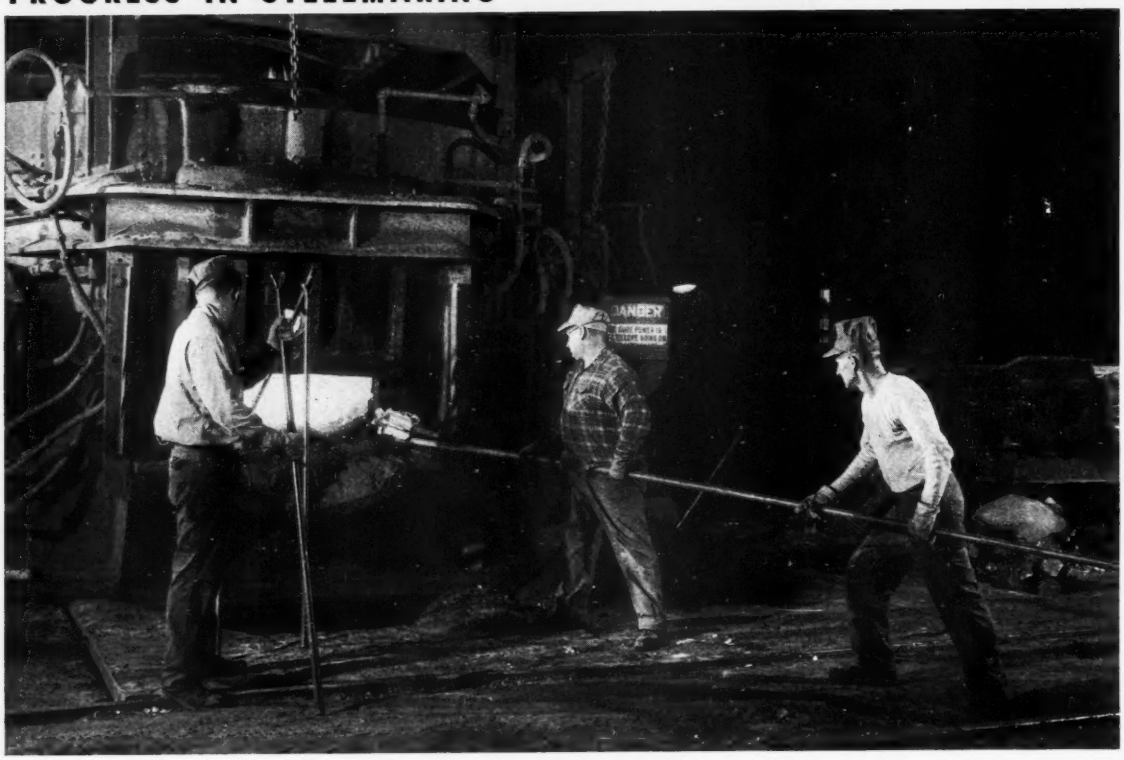


Aluminum, shown here being added to a heat in an electric furnace, will later provide a quick and accurate measure of the grain size of the metal

Aluminum Good Yardstick for Steel Grain Size

Spectrographic measurement of residual aluminum in quality steels determines austenitic grain sizes. Process takes two hours instead of two days for wet-chemical method

By JOHN W. ALDEN
Chief Mill Metallurgist
and
JOSEPH G. MRAVEC
Melt Shop Metallurgist
Steel and Tube Division
Timken Roller Bearing Co.
Canton, O.

AUSTENITIC grain size in high quality steels depends on aluminum content. This fact is pretty well established; but, could the system be reversed—could grain size be quickly determined by checking aluminum content of each heat spectrographically? Two years of tests at Timken Roller Bearing Co. prove that it can be done.

At the Steel and Tube Division we long have been cognizant of the fact that while aluminum is used for grain size control, it is actually the amount of aluminum retained by the steel, rather than the amount added, that controls the austenitic grain size. Over a long period of years, we have found heats that were made by an established fine grain practice occasionally came coarse grained. A chemical check of the aluminum content on all such coarse grained heats always showed a very low residual aluminum content—usually below 0.010 per cent aluminum.

Wet Analysis Too Slow—On fine grain steels, however, the aluminum content was consistently over 0.015 per cent—usually in the range of 0.015 to 0.035 per cent aluminum. It has, therefore, been evident for quite a long time that austenitic grain size depends mainly on aluminum content and that aluminum content might provide a means of appraising the grain size of the heat. However, the wet chemical analysis of steel for aluminum content requires several days to run and is not practical to be used for appraising the grain size of every heat of steel.

Installation of a direct reading spectrometer in 1947, however, has cut down the time for running alu-

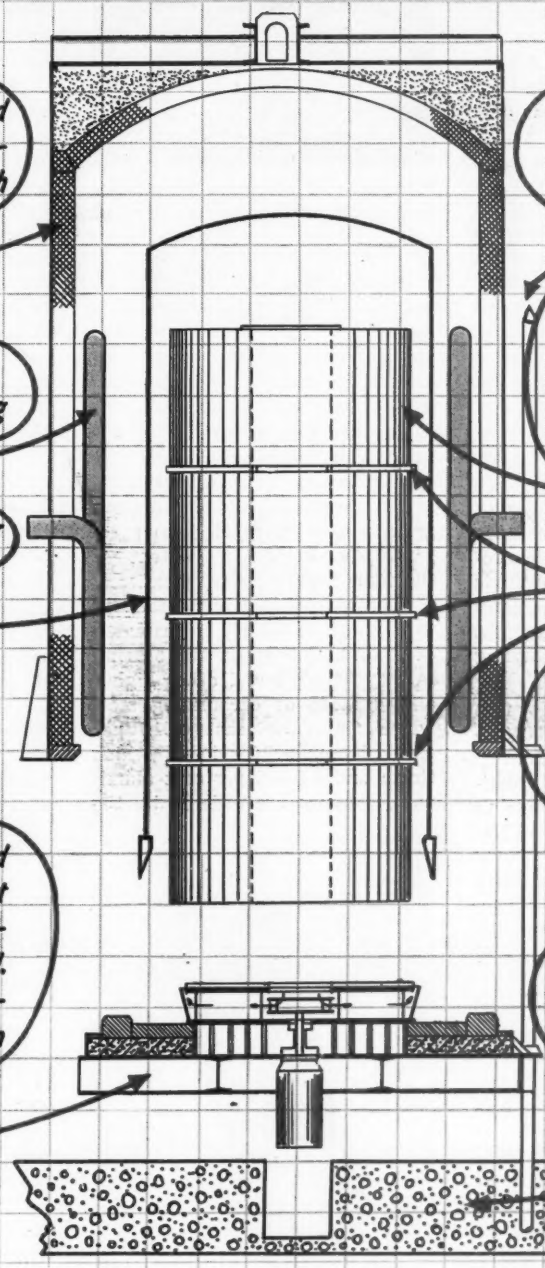
Lee Wilson

ANNEALING FURNACE DATA SHEET

NUMBER SEVEN

PORTABLE BASE SINGLE STACK ANNEALING SYSTEM

REVOLUTIONARY NEW ANNEALING SYSTEM FOR LARGE STRIP & TIN PLATE MILLS



Single-stack furnace heats and cools down faster, more efficiently. Easier to handle with lighter equipment.

Guide-post guides both furnace and portable base. Assures perfect alignment.

"O" type heating tube gives faster, more regulated heating

Single stack of steel gets steady, even, easily controlled annealing. A better job can be done faster with the Lee Wilson single-stack system.

Light, easy to store inner cover

Special swirl design convector plates uniformly apply heat assuring even annealing throughout coil.

Completely portable base and fan unit can be carried by light crane equipment to maintenance bay if repairs are needed. Extra floater base can be substituted immediately. No down time for repairs.

Small, easily constructed fan trench. No elaborate and expensive pits are needed.

Lee Wilson ENGINEERING COMPANY, INC.

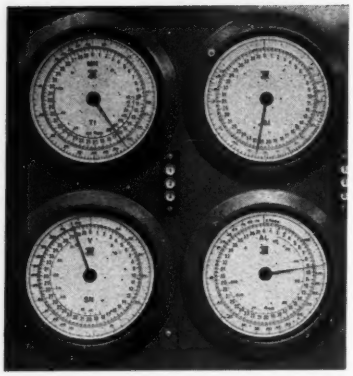
Get all the facts about this amazing system — write for Brochure

minum in steel to less than a minute. This has enabled us to have the complete chemistry on all heats within two hours after they are poured and even before ingots are delivered to the soaking pits for reheating for blooming.

Lots of Data—Since our direct reading spectrometer has been calibrated to run aluminum on all plain carbon and alloy steels (stainless steels excepted), we have been running and reporting for the past two years spectrographic aluminum on the ladle tests of all heats which must meet grain size specifications. During this period, we have accumulated spectrographic aluminum and McQuaid-Ehn grain size data on thousands of heats of steel. This, of course, has enabled us to conduct extensive studies in regard to the relationship between spectrographic aluminum content and austenitic grain size.

Establish Relationship—One of our first studies was based on 961 electric furnace heats of TS-4720 and other higher alloy grades of carburizing steel which are made for our bearing factory. The relationship between spectrographic aluminum and McQuaid-Ehn grain size of these grades of steel brought out the following outstanding points:

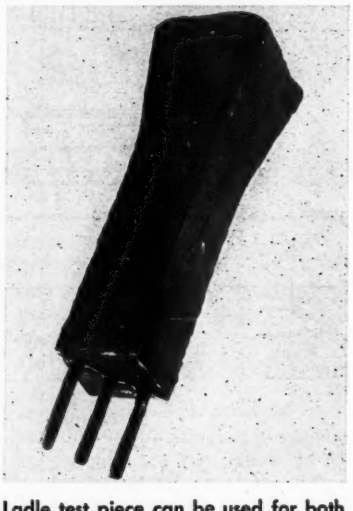
1. Ideal aluminum range for fine grain TS-4720 steel is 0.016 to 0.035 per cent aluminum.
2. Above 0.035 per cent aluminum the grain size tends to be less fine but is still all No. 6 or finer.
3. In the aluminum range 0.011 to 0.015 per cent, the grain size tends to be less fine although still remaining No. 6 or finer.
4. In the aluminum range 0.006 to 0.010 per cent, grain coarsening is very pronounced.
5. In the aluminum range, 0.000 to 0.005 per cent, the grain size is all coarse.
6. Of 881 heats which finished 0.016 per cent aluminum or higher, 879 or 99.8 per cent were of No. 6 grain size or finer while all 881 were of No. 5 grain size or finer. In other words, fine grain electric furnace TS-4720 steel is 100 per cent assured if its aluminum content is at least 0.016 per cent.



Percentage of aluminum is recorded from direct reading spectrometer dial

OK for Bearings—Because the results of the aluminum versus grain size study on the TS-4720 and other higher alloy grades of carburizing steels for our bearing factory showed convincing evidence that fine grain steel is assured by a minimum of 0.016 per cent aluminum content, the bearing factory consented to accept grain size ratings based on spectrographic aluminum content of the ladle tests on each heat.

This has enabled our steel mill to discontinue taking and running of grain size tests on our bearing factory TS-4720 and other higher alloy grades of carburizing steel which finish at least 0.016 per cent aluminum. On heats which finish under 0.016 per cent aluminum, coupons are ordered by the melt shop metallurgical observers. Actual grain size rating is therefore reported on these heats and they are applied or rejected for grain size on this basis.



Ladle test piece can be used for both chemical and spectrochemical analysis

Evaluating grain size on the basis of spectrographic aluminum content of the ladle tests has the following advantages over the practice of actually running McQuaid-Ehn grain size tests on every heat:

Simpler and Faster—After ladle pins are received at the spectrographic laboratory, less than one minute is required for obtaining aluminum results from the direct reading spectrometer. On the average, aluminum results and complete chemistry of all elements are reported on all heats within two hours after tapping. From the aluminum results, we can immediately tell whether the grain size on the heat will meet specifications.

Actual checking of the McQuaid-Ehn grain size requires a minimum of two days time after tapping of a heat if tests are taken on blooms at blooming mill. If tests are taken at some later stage in processing, the reporting of grain size tests are even further delayed.

Cost is Nil — Because spectroraphic aluminum is run on same ladle pin tests as used for running of other elements in steel, no extra tests, materials, or labor are required for determining the aluminum content on the direct reading spectrometer. Hence, checking of aluminum adds nothing to the cost of operating the spectrometer; whereas the extra time, work, and material involved in running of McQuaid-Ehn grain size tests are definitely items of expense.

More Reliable—Since aluminum content is the basis for grain size control, the aluminum content of a heat is a more reliable indication of its grain size than the results of any particular grain size tests, which are always subject to possible human errors in conducting the lengthy tests and rating and reporting of their results. As a matter of fact, we occasionally encounter grain size ratings which are not in line with the expected grain size on the basis of aluminum content; then, on running rechecks on another set of tests the grain size is found to be as originally predicted by the aluminum content.

Cut Grain Checks — Following

PEARLITIC—Temper-rolled in controlled hardness and strength for blanking.
SPHEROIDIZED—Annealed, soft and ductile—ideal for cold forming operations.
for blanking
...or forming

it's easier when you use **WEIRTON**

HIGH-CARBON STRIP

COLD-ROLLED SPRING STEEL

Either for blanking or for forming, there is a Weirton cold-rolled spring steel having special qualities and properties that make the operation easier to perform and make the manufactured product better. You will always get consistent results, too—because Weirton's close control over every step of manufacture assures constant uniformity.

You can count on Weirton High-Carbon Strip cold-rolled spring steel . . . for accurate response to heat treatment —uniformity of gauge and width—uniform chemical and physical properties—exact constancy of grain structure —controlled decarburization limits.

Weirton High-Carbon Strip is obtainable with the desired chemical analysis and for specific heat treating and hardness ranges, in widths up to seven inches.

WEIRTON STEEL COMPANY

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NATIONAL STEEL CORPORATION

40,000 lb. ERIE STEAM HAMMER
Increases Production at Kropp Forge Company

PART of the Kropp Forge Company's $5,000,000 expansion program is this 40,000 lb. Erie Steam Drop Hammer making aircraft forgings. Well known for top quality forgings, Kropp is meeting today's all-time high forgings demand with greatly expanded facilities . . . in which Erie Hammers play a major part. Forgings are as good as the hammergangs and hammers that make them. Kropp's choice of Erie Hammers recommends them highly to you. Write for Bulletin 340 giving complete details on Erie Steam Hammers.

ERIE

ERIE FOUNDRY COMPANY ERIE, PENNSYLVANIA

Dependable **FORGING HAMMERS • HYDRAULIC PRESSES**

discontinuation of checking grain size on the bearing factory heats with minimum of 0.016 per cent aluminum, it became evident that fine grain TS-4720 and other higher alloy grades of carburizing steel are assured even with aluminum below 0.016 per cent. Forty-six more heats whose aluminum content was under 0.016 per cent aluminum, showed that safety from coarse grain size on TS-4720 and other higher alloy grades of carburizing steel is had with as low as 0.012 per cent aluminum. Accordingly, therefore, checking of grain size was limited only to heats with under 0.012 per cent aluminum.

No Rejects—Since we first started to rate grain size on TS-4720 and other higher alloy grades of carburizing steel on the basis of aluminum content, we have applied to our bearing factory the equivalent of 315,000 net ingot tons of steel (approximately 7000 heats) without any coarse grain steel being encountered by our bearing factory.

Currently we are rating grain size on the basis of spectrographic aluminum content of ladle tests on all electric furnace heats of steel made for our bearing factory. This practice not only saves on the cost of checking McQuaid-Ehn grain size tests but also enables us to know within two hours after tapping whether a heat will meet its grain size specification. Such fast grain size information on a heat of steel greatly expedites its application on specific orders by virtue of the fact that no delay is encountered in waiting on grain size test results.

There is no doubt in our minds but that our direct reading spectrometer is an especially valuable tool for grain size rating and control.

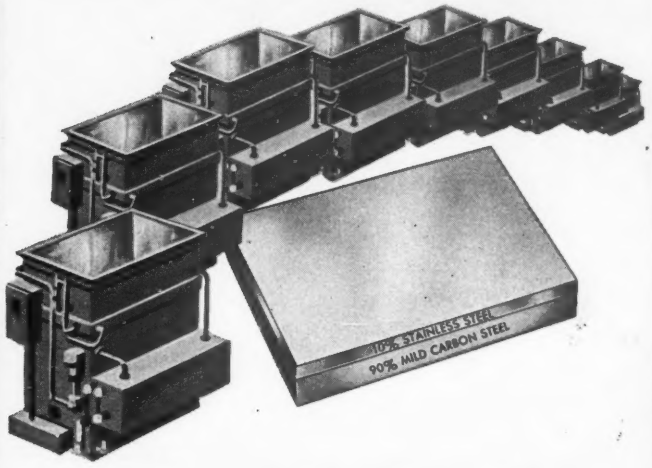
Caster Makers Publish Text

A text designed to acquaint users with the terminology and fundamentals of casters, wheels, hand and floor trucks, pallets and skids is announced by Caster & Floor Truck Manufactuers' Association.

Titled "Handbook of Materials Handling Equipment" it is available from the association office in Chicago. Price is $1 per copy.

How to Make Stainless Protection Go NINE TIMES FURTHER... with PERMACLAD

STAINLESS CLAD STEEL



Want stainless protection for your product or equipment—without wasting stainless steel? You'll get it at low cost—with PERMACLAD!

A 10% layer of stainless, inseparably welded to a 90% mild steel backing, gives PERMACLAD the surface characteristics of solid stainless *and* the easy forming qualities of carbon steel. This means real savings in corrosion resistance and in fabrication as well. For you can cold-form PERMACLAD with ease, draw it deeper without intermediate annealing, actually form it into products impossible with many other materials.

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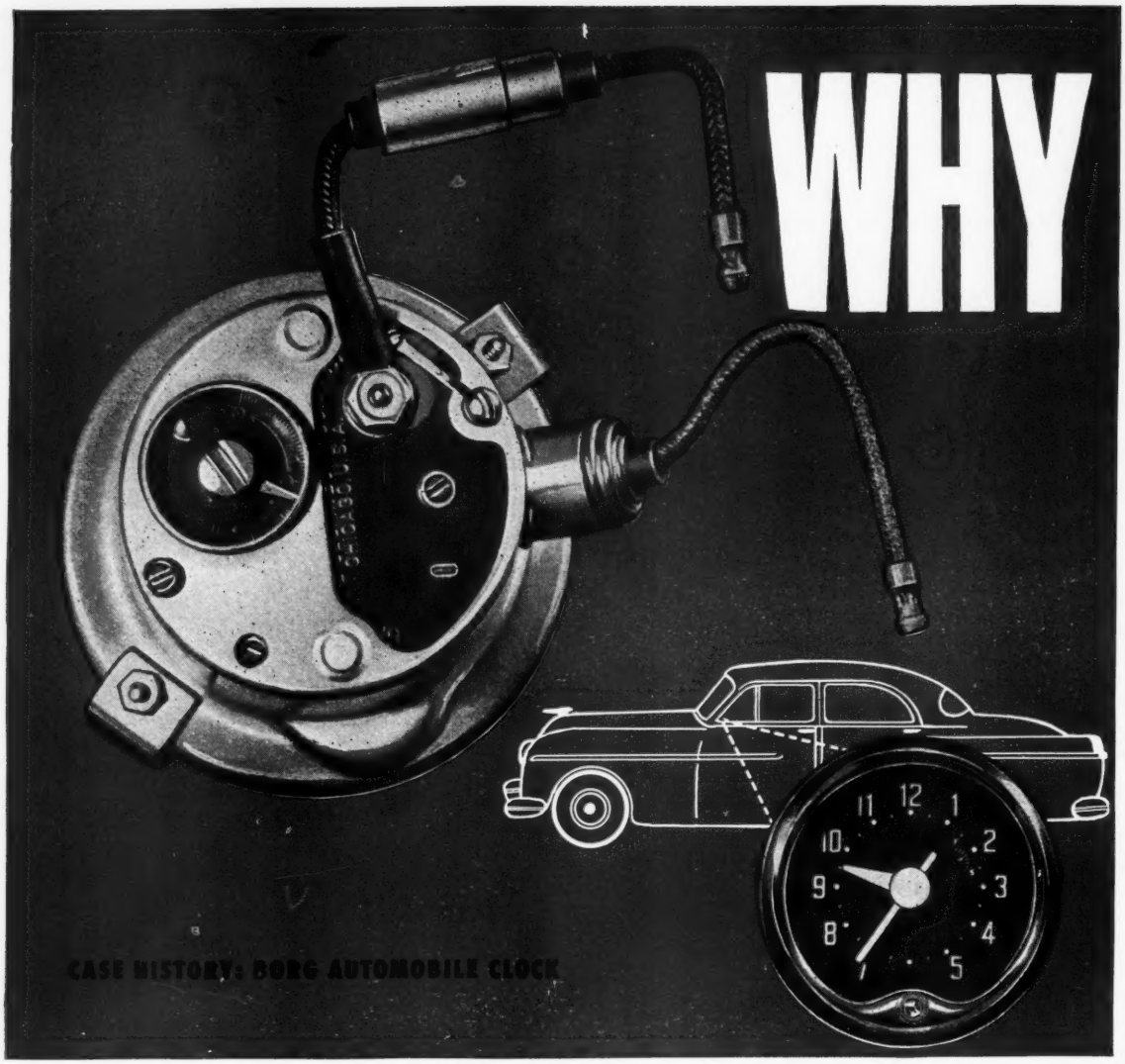


A switch to aluminum for parts of this Borg automobile clock eliminated electroplating, lengthened tool life, increased machine output and reduced shipping, handling and assembly costs . . . each one a good answer to the question, "Why Aluminum?"

When these clock cases, brackets and inside anchor plates were made of another metal, they had to be electroplated to guard against rust and to give them an attractive appearance. Now, as a result of changing to aluminum, electroplating is no longer needed because aluminum requires no protection and has a naturally attractive, permanent appearance.

Converting to aluminum provides other definite manufacturing advantages, too. Tools do their work easier because aluminum is more easily fabricated in press operations—thus aluminum greatly extends tool life. Also, due to the ease of working aluminum, presses run at higher speeds and for longer periods of time between reworking of dies—thus aluminum increases machine output.

Thanks to aluminum, the overall weight of this electrically operated automobile clock is now 31% less. This lowers transportation costs in shipping from manufacturer to auto assembly plant, reduces handling costs in the plant and provides faster, easier assembly into the automobile.

Chances are, some or all of the manufacturing advantages of aluminum found by the George W. Borg Corporation, Delavan, Wisconsin in making this clock can also apply to your operations. Chances are, aluminum can also make your products better.

LET ALUMINUM SERVE YOU, TOO

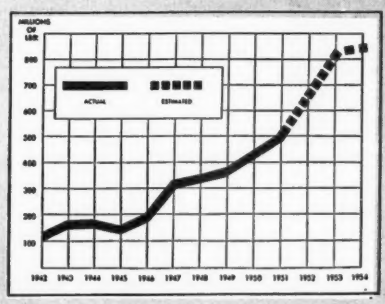
ALUMINUM?

...because it has an ideal combination of advantages found in no other metal!

More aluminum is being specified in designs today because aluminum improves products and increases sales. Let Reynolds Aluminum Specialists help your designers and engineers get maximum benefits from this modern metal. Remember, only aluminum gives you . . .

- ★ **Lightweight with great strength**
- ★ **Consistently low cost**
  no more than before World War II
- ★ **Natural resistance to rust and corrosion**
- ★ **Attractive appearance**
- ★ **Ease of fabrication by modern methods**

STILL MORE ALUMINUM COMING



The expanding primary aluminum production of Reynolds Metals Company... a historic chapter in the company's 33 years of continuing growth. And primary supplies of aluminum ore will be ample for generations.

To the man in charge of production

Acquaint yourself with accepted techniques for fabricating aluminum. Write on your letterhead for aluminum fabrication books listed at right. On special problems consult with Reynolds staff of aluminum specialists. Reynolds Metals Company, 2520 South Third Street, Louisville 1, Kentucky.

Yours For The Asking . . .
REYNOLDS TECHNICAL BOOKS

(please request on business letterhead)

- Aluminum Data Book
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- Aluminum Structural Design
- Designing with Aluminum Extrusions
- Fastening Methods for Aluminum
- Finishes for Aluminum
- Forming Aluminum
- Welding Aluminum
- Machining Aluminum Alloys
- Heat Treating Aluminum Alloys
- Metals Weight Slide Rule

Complete index of all technical literature and films on aluminum design and fabrication also available.

See "Doc Corkle" with Eddie Mayehoff, Sunday night, 7:30 EST and PCT, NBC-TV; hear "Fibber McGee and Molly" Tuesday night, 9:30 EST, NBC.

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MODERN DESIGN HAS ALUMINUM IN MIND

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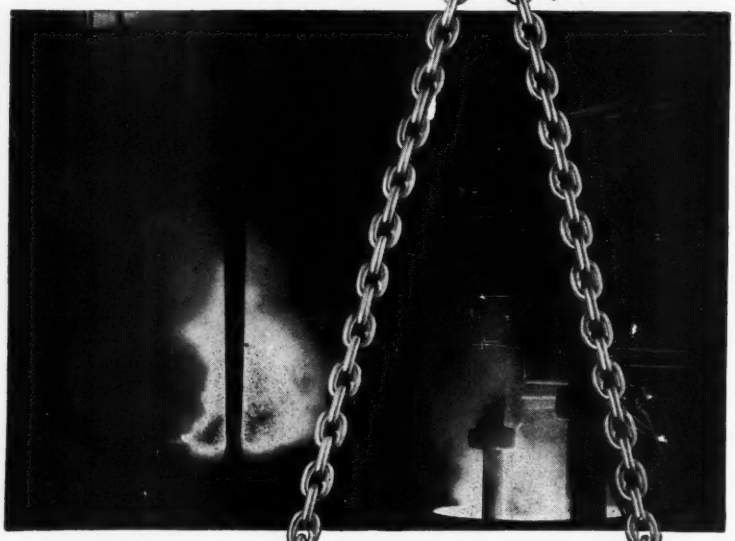
STRENGTH—Size for size, no other sling chain offers a greater tensile strength. HERC-ALLOY will not crystallize—never requires annealing.

SAFETY—HERC-ALLOY Sling Chains are made to your specifications. Every new sling carries a written guarantee, is registered and tested before shipping. This registration serial number is carried at the top link.

● Serial number permanently affixed near top link for positive identification.



● Identify HERC-ALLOY by the patented Inswell side weld with the extra swell of metal on the inside of the link.

EFFICIENCY—Lighter, stronger HERC-ALLOY Sling Chains feature the exclusive short, narrow link design which holds firmer, less tendency to kink, less gouging. Workmen handle HERC-ALLOY with less effort.

PREFERENCE—Men who buy and use sling chains are influenced only by facts learned through experience. HERC-ALLOY Sling Chain preference has been built up over the years, not just by what we say, but by how HERC-ALLOY performs on the job.

Write for Data Book No. 3 which contains much useful manufacturing and application information on HERC-ALLOY Sling Chains.

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Foreign Machine Tools

(Continued from Page 92)

creased war effort. While present U. S. delivery of light-duty machine tools is reasonably prompt, domestic delivery of heavy-duty equipment is far behind schedule. Such machines however, are available on prompt delivery from foreign sources.

There are some however, who state that to import such equipment, even at a time when it is urgently needed, can spell a period of slump for U. S. machine tool producers in the years to come. Let us look at this situation in another way.

Temporary Condition—Suppose the U. S. government stated that no American-made automobiles would be available to the general public for a period of three years. If comparable models were available from Europe, wouldn't it be natural for the American people to import needed cars from abroad. Such purchasing, at a time when domestic autos were not available, certainly wouldn't spell a catastrophe for our automobile industry once cars were again in supply. Yet, that is what many people would lead us to believe about the present machine tool picture.

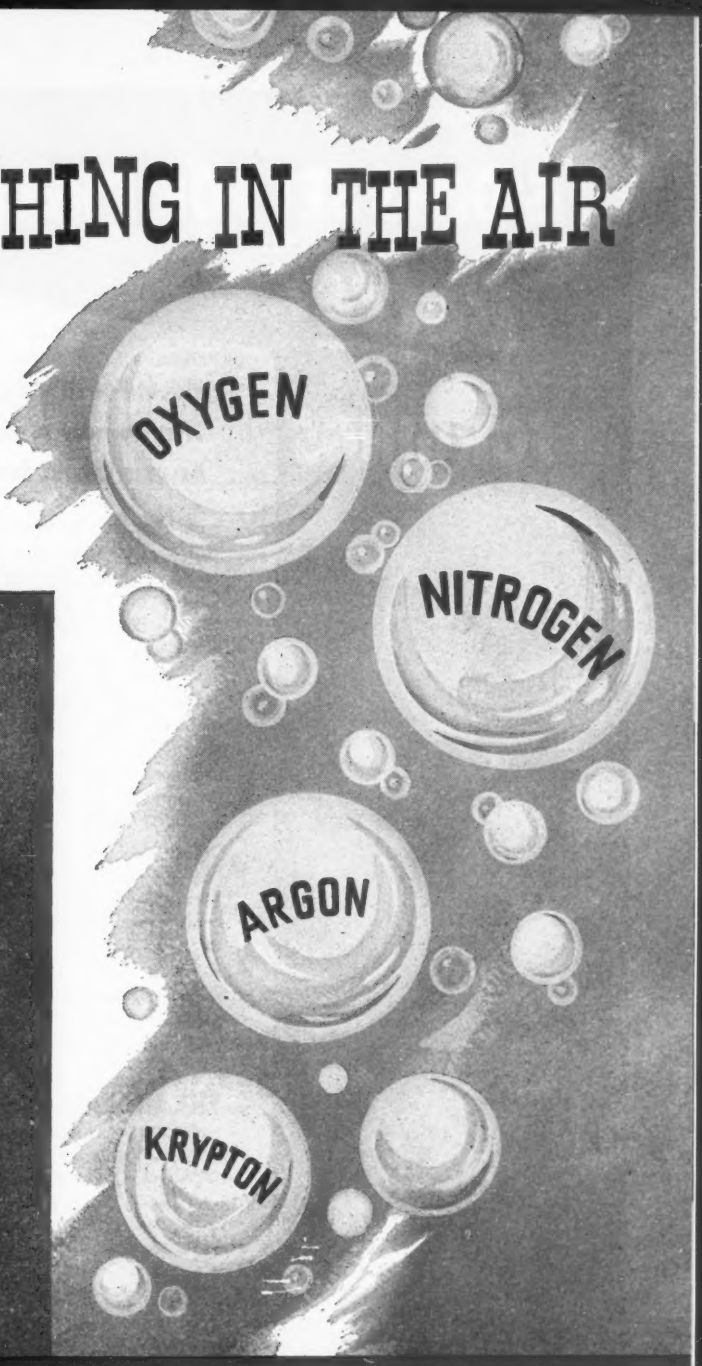
More and more American companies are looking to foreign manufacturers to aid them in meeting their defense contracts. Representative firms such as General Electric, Curtiss-Wright, Pratt & Whitney, Lockheed, Ryan Aeronautical, and others are among those who have placed large orders abroad for critically needed machine tools. Certainly these firms are not trying to undermine the American industrial market—particularly since some of the regular products of these same firms are often channeled into the production of U. S. machine tools themselves.

Price Picture — Previously, I stated that prices of most foreign-made and domestic machine tools were comparable. There are some users in this country who will quickly deny that—but with good reasons.

As with any industry, there are always some members who take advantage of the law of supply and

THERE'S SOMETHING IN THE AIR

...that you can make a profit on!



All of the valuable components in the air you breathe can be separated for industrial use in high purity.

OXYGEN for steel production, non-ferrous metallurgic welding and cutting, synthetic fuels and chemical processes;

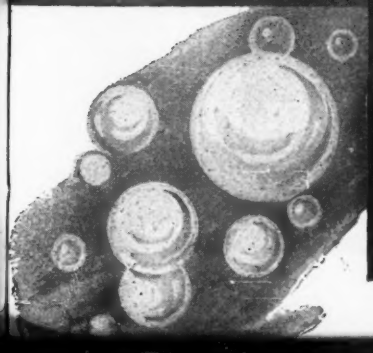
NITROGEN for synthetic ammonia and inert atmospheres;

ARGON for shielded arc welding;

ARGON and **KRYPTON** for incandescent lamps.

Complete plants, using processes based on the developments of Gesellschaft fuer Lindes Eismaschinen, A. G., for producing these gases singly or in combination are furnished to fit your requirements.

Blaw-Knox also furnishes complete Linde plants for the separation of industrial gases such as coke oven gases, natural gas containing nitrogen, purged gases from ammonia synthesis, nitrogen-hydro-carbon mixtures, cracked refinery gases and mixtures of hydrogen or carbon monoxide.



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From Furnace to Finish
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From the time the scrap and pig iron are charged into the furnaces until the forging is machined to a precision finish Midvale craftsmen carefully control quality.

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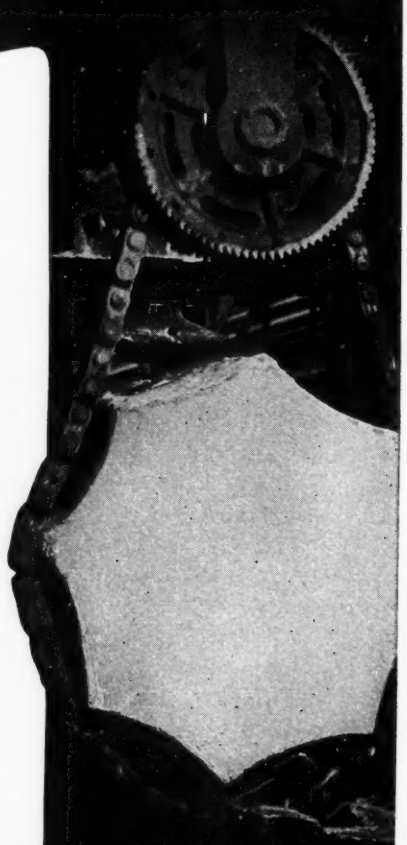
When heavy forgings must meet rigid specifications, rely on Midvale precision craftsmanship and engineering cooperation.



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Custom Steel Makers to Industry

PRODUCERS OF FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS

demand to make unjust profits. Unfortunately, this is also true of a small number of importers. It is certainly not true of the importing field as a whole, however.

In our calls on U. S. plants, we have discovered that some importers have sold foreign-made machine tools at more than 50 per cent higher than the normal markup price. In other cases, we have found companies had purchased such equipment without provision for service and without the ability to get replacement parts. Even if the machine was a good one, the user became dissatisfied with all foreign-made goods, and understandably so.

It is the duty of the great majority of reliable importing firms to correct any misunderstandings caused by these few disreputable concerns.

Trade Needed—High tariffs are no longer the answer to controlling world trade. The dependence on American aid by our foreign friends and the dependence of this country's economy on its many imports make for an economically stable world.

Commenting on a proposal to increase tariffs on the importing of Swiss watches, President Truman made this statement, a statement which is true of the entire importing-exporting picture: "United States exports to Switzerland are almost double our imports (from this country). If in these circumstances, we should erect new barriers against the importation of Swiss watches, we would, at the same time, be erecting barriers against our own export markets."

How true this is of machine tools also.

American industry has grown—our country has grown—on a foundation of free enterprise. The spirit of competition has made American industry what it is today. The importing of foreign-made goods has made it mandatory that American manufacturers produce even finer goods than ever before.

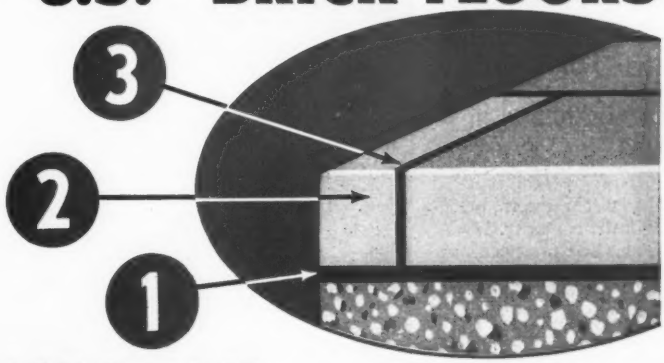
Ghost Competition—Appeals to government for protection against a future enemy which has not yet asserted itself is not only asking for further government interference in private industry, but at the same time is both shutting the door against healthful foreign competition and also hurting our foreign markets.

With more than $187 million worth of machine tools exported in 1951, it would seem that this is the time to encourage the interflow of goods between this country and its foreign friends. Contrary to some opinion, dollars are not the main reason for our not shipping even more machinery abroad. It is purely a case of our production not being able to meet the demand.

Our future and the future of the free world depends on the continued unrestricted flow of goods, No matter what our individual beliefs, we are living in a world where distances are no longer a factor and where all free nations must unite against the threat of Communism.

A sense of self preservation coupled with a common sense attitude toward dollars which are flowing into this country makes it mandatory that there should be no restrictions against the machine tools which are currently being imported and which are answering a crying need in our war effort.

Low Initial Cost — Negligible Maintenance
Protection Against *BOTH* Acids and Alkalies
in "U.S." BRICK FLOORS



A "U. S. Triple Construction" Corrosion Resistant Brick Floor provides complete protection against acid and alkali attack for practically an unlimited number of years — usually without maintenance expense of any kind.

First, an impermeable membrane of U. S. Stoneware's "RESILON" is applied over a 4" to 6" rigid sub-base. Chemically-resistant, nonporous, and flexible, Resilon protects the subfloor against acid seepage. Then split or full size "USSCO" Acid Brick (depending on the load) are buttered with "DURISITE" Cement and laid with joints $\frac{1}{16}$" to $\frac{1}{8}$" thick.

"USSCO" Acid Brick are dense, strong, resistant to erosion and spalling. Accurately shaped to lay tight and flat. "DURISITE" Cement sets quickly by chemical action — resists *both* acids and alkalies, as well as oils, greases, solvents and water. Completely nonporous, it bonds brick tightly with wafer-thin joints. Durisite is nontoxic, safe for workmen to use, and stable in storage.

YOUR OWN MASONS CAN LAY A "U.S. TRIPLE CONSTRUCTION" FLOOR

We will provide the materials for your own workmen to install a "U. S. Triple Construction" Floor, or if you prefer, we can handle the installation of the complete floor.

Write for this free book!

Detailed construction drawings showing approved methods of building floors, trenches, gutters, tank and motor supports, etc., with full technical data, photographs and case histories. Ask for Bulletin AB-17.

A13C

U. S. STONEWARE
AKRON 9, OHIO

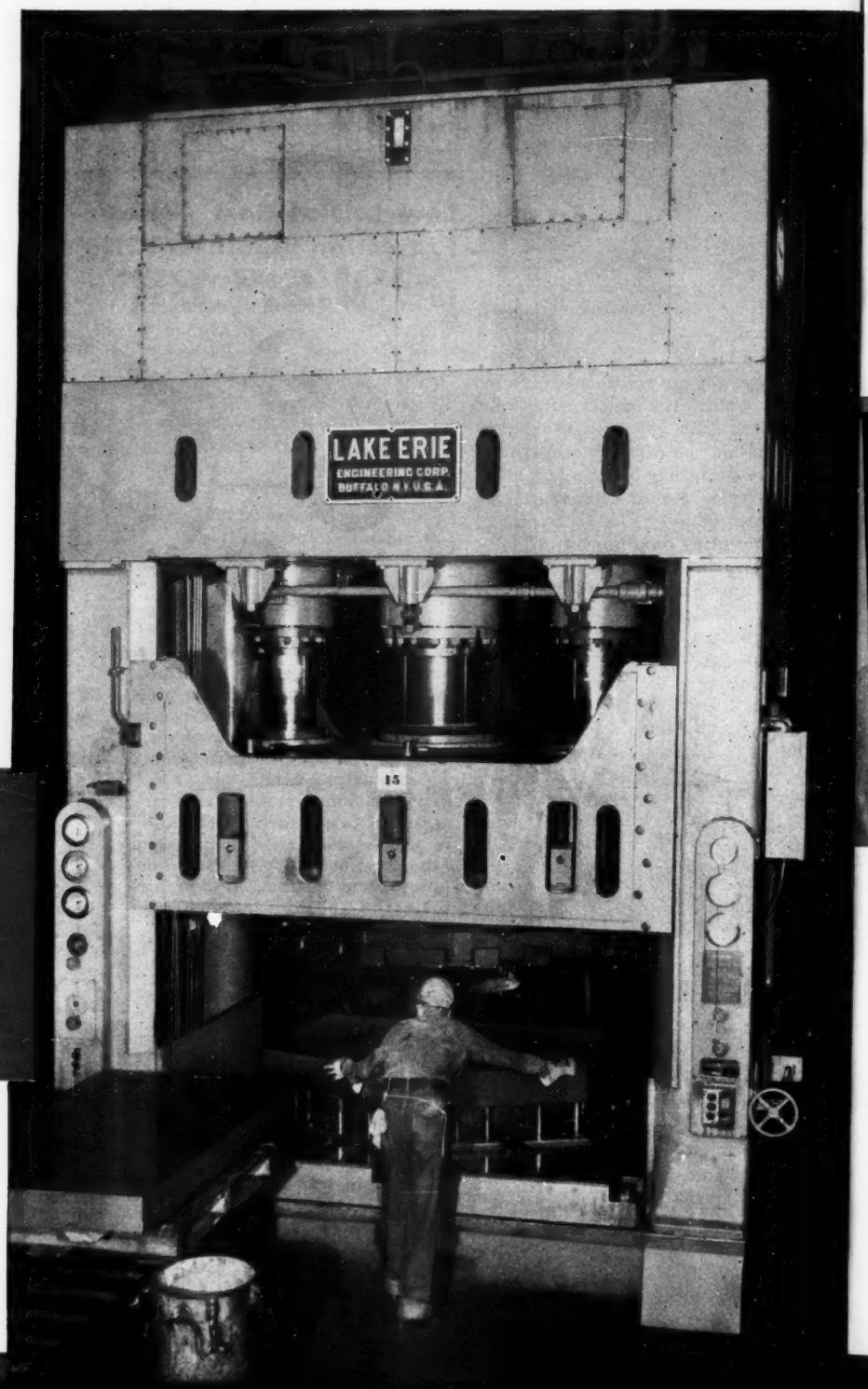
PROCESS EQUIPMENT DIVISION

The UCHTORFF

NEW 600 TON METAL DRAWING LAKE ERIE HYDRAULIC PRESS

in the Uchtorff plant

"We are proud of this press," says Mr. A. F. Uchtorff, president of the company. "Our customers and prospects are pleased too for now they have efficient metal forming facilities nearby for large pieces as well as the smaller ones formed on our original press. Our Lake Erie presses are saving time and money for our clients."



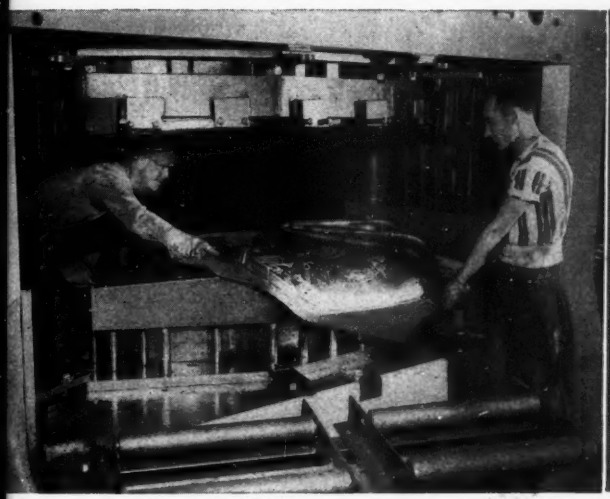
Repeat orders are the rule at Lake Erie

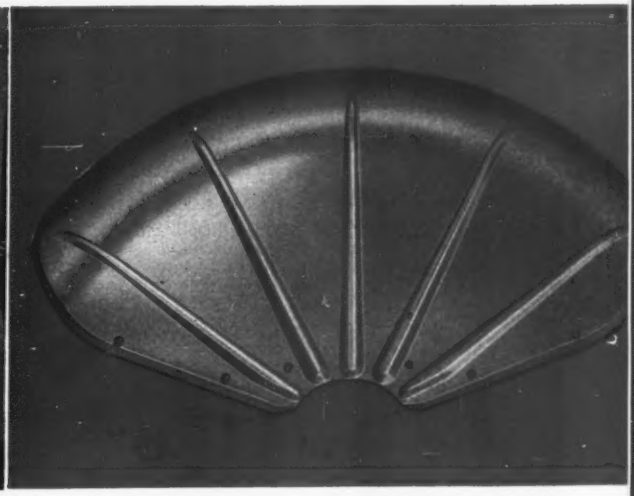
Being so satisfied with your first Lake Erie press that you soon want another is typical. It is the recorded experience of hundreds of leading plants...the best evidence in the world of the production improvements you can count on with Lake Erie hydraulic equipment.

Success Story...

...another tribute to versatile LAKE ERIE HYDRAULIC PRESSES

"Satisfy the customer's need," is the successful policy of The Uchtorff Company, Davenport, Iowa. In selecting Lake Erie Hydraulic Presses for their plant, Uchtorff acquired ideal equipment for this purpose. The first press quickly attracted and built-up a profitable volume of business. The second, and bigger press, is greatly expanding it in the farm implement, tractor and other fields requiring large drawn and formed parts. Versatile... fast... dependable... and efficient, Lake Erie Hydraulic Presses are "satisfying customer's needs" in hundreds of leading plants today. The newest presses are setting unmatched production records for a surprising variety of metal forming jobs. Why not ask us about these applications for your plant? Glad to have you. No obligation. Write or phone.





New 600 ton press with 200 ton hydro-pneumatic die cushion is shown forming hood wrapper for farm harvester. Piece is formed out of 22 gage deep draw steel and measures 34½" side to side by 48" top to bottom. Depth of draw is 5". Tonnages employed on this job are 400 on top platen and 100 on die cushion. Other typical parts formed on the Lake Erie presses are farm tractor fenders, farm tractor engine oil pans, farm plow depth gauge wheels and farm tractor engine valve covers. The unusual speed with which dies can be set up or changed is another important production advantage of Lake Erie hydraulic equipment.

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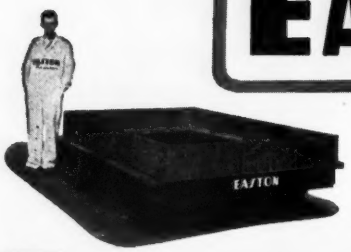

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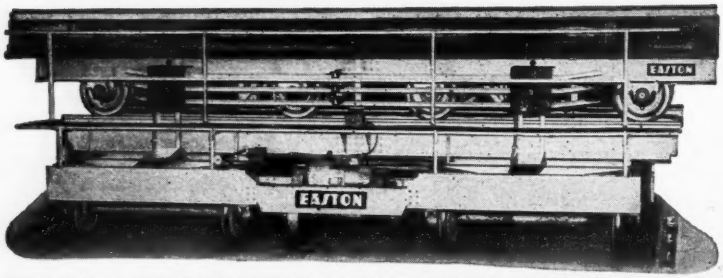
Electric furnace car mounted on electric transfer car for completely automatic continuous heat treating system.



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Precision Sheets Ground

Machine faces metal or other material to thickness tolerance of plus or minus 0.0005-inch

SURFACE grinder that faces wide web sheets of metal or other materials, maintaining a thickness tolerance of plus or minus 0.0005-inch on the finished stock, is a development of Curtin-Herbert Co., Gloversville, N. Y. Called the Micro-Grinder, it was produced in co-operation with Behr-Manning Corp., Troy, N. Y.

This degree of accuracy is achieved through the use of a coated abrasive cover, spiral wound on a cast iron back-up roll. Machine widths range from 12 to 80 inches, but widths of 40 to 52 inches are standard. Edges of the abrasive cover do not overlap, but

RUBBER-FACED ROLL
. . . backs up the work being ground

are butted together. This technique permits utilization of the entire drum periphery.

Accuracy Controlled — Accuracy of the finish-ground web depends on hardness of the material to be ground and amount of the stock to be removed. On relatively soft metallics, 0.0625 plus or minus 0.0005-inch of stock can be removed in one pass through the grinder. Hard non metallics, such as mica and laminated phenolic, have been given a 0.030 plus or minus 0.0005-inch cut at one pass.

Either an oscillating or nonoscillating type drum can be used on

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4. **Easy portability.**
5. **No maintenance; no re-calibration.**

REMEMBER: Heat Prover is not an instrument you buy but a service we supply. Contact the Cities Service office in your area and learn how Heat Prover can serve you . . . or write CITIES SERVICE OIL COMPANY, Dept. K24, Sixty Wall Tower, New York City 5.

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LOWERS INITIAL and MAINTENANCE costs.
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Send a few unfinished parts to us . . . plus a finished part as a guide. We guarantee that you will get the same results in your plant that we produce in our laboratory. There's no obligation.
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the grinder. However, a more uniform finish is generated by the oscillating drum and the life of the coated abrasive is longer than on the nonoscillating drum. Since the drum is completely enclosed, an exhaust duct built into the hood removes the swarf generated by grinding.

Pinch-Roll Feed—The web stock to be ground is fed into the grinding area by a series of rubber-covered pinch rolls. Mounted directly under the grinding roll is a precision ground steel billy roll that supports the stock as it is being ground.

For making adjustments that are finer than can be made with the dial indicator, graduated collars on the handwheels are marked in increments of 0.0001-inch.

Porcelain Coating Licks Rust

High acid resistant porcelain enamel coating for steel, said to be the most effective yet developed, is announced by Seaporcel Metals Inc., Long Island City, N. Y. The firm reports that the new finish is also able to withstand thermal shock.

Known as CRC-14, the coating has withstood a boiling in 1 per cent sulphuric acid with a weight loss of only 1 mg per sq in. in a 24-hour period. This compares with weight losses of 5 mg per sq in. in only a 2-hour period for previously developed acid-resistant ceramic coatings.

Characteristics of the new coating when applied to low carbon steel compare favorably with those of stainless steel, company officials say, and it should provide a substitute for stainless in many applications.

Titanium Has Good Navy Future

Three things retard the Navy's use of titanium—cost, lack of use data, and unavailability of large tonnages, reports E. L. Beardman, metallurgist for the Office of Naval Material.

The metal's low density, superior strength, particularly at high temperatures, nonmagnetic characteristics, and resistance to corrosion and chemical action make it potentially of great importance to the Navy, he asserted.

Applications which await exten-

to safeguard finely machined parts

hydraulic circuit of this wire take-up machine includes a Ross Exchanger

This Hydraulic Constant Tension Wire Take-Up Machine, a product of Industrial Ovens, Inc., propels and winds wire continuously at speeds up to 3000 ft. per minute.

One of its principal features, in addition to high speed, is constant control of tension during winding, as well as cross-over from full to empty reels . . . a necessity to the coating qualities and tightness of the wire. Maintenance of tension is provided by an hydraulic system . . . *and a key component of that system is a Ross Type BCF Exchanger, used regularly as stock equipment.*

Function of this compact Ross unit — To maintain a uniform temperature, hence constant viscosity, of the operating oil and thereby: (1) Prevent carbonization which would damage finely machined parts in the valves, pumps and drive motors. (2) Prevent lost capacity through pump slippage.

Like Industrial Ovens, Inc., numerous manufacturers of hydraulically operated machines have found the Ross "BCF" to be the most practical means of holding oil temperatures within tolerances required by hydraulic circuits. Long lasting, by reason of its all-copper and copper alloy construction, economical and time-saving because of its pre-engineered, fully standardized designs, the Ross Type BCF Exchanger is today a stock accessory with most original equipment builders. *Details in new Bulletin 1.1K5. Write.*

KEWANEE-ROSS CORPORATION
DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
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In Canada, Horton Steel Works, Limited, Fort Erie, Ont.

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Problem...

HOW TO MASS PRODUCE HEAVY VEHICLE HULLS...

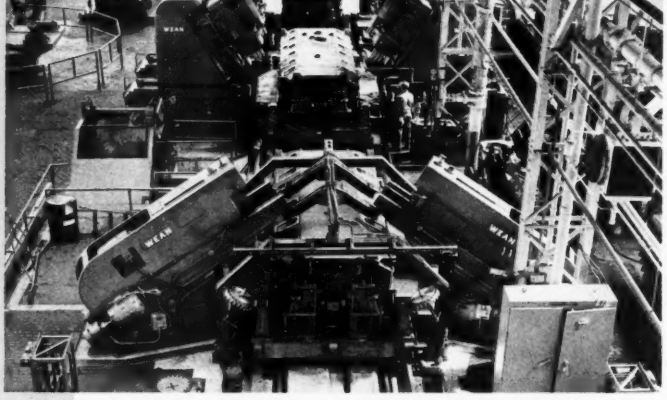
Four-ton vehicle hull for the Army's new Combat vehicle. Precision milling armor plate on a production line.

When Massey-Harris took on the business of making the Army's new combat vehicle they had to contend with handling and precision working the four-ton armor plate hull. The job amounted to milling six suspension slope pads and drilling a pattern of holes in each, profile mill the face of the final drive adaptor casting, rough and finish ream the rear idler opening and drill and tap four mounting holes. All this is to be done on the underside of the hull.

Massey-Harris first considered standard machine tools, but after conferring with Wean Equipment engineers decided the most efficient, quickest and best method would be a complete line, especially built to do the job.

Solution...

UNIQUE TRANS-CAR MACHINING LINE DESIGNED AND BUILT BY WEAN SPEEDS PRODUCTION, REDUCES HANDLING...



Overall view of Wean Line that effected tremendous savings in producing giant hulls.

Wean could iron out the details and build the line in 8 months, as against a 3-year wait for some of the conventional machinery that would be needed. And the line would be adapted to the job, rather than trying to make standard equipment perform a job for which it wasn't exactly suited. The cost of the special line was no more than what would be needed to purchase the conventional machinery to do the job, yet the efficiency of the special line meant tremendous savings after operations got underway.

The Wean line is composed of three main machining stations. The hull is lowered upside down onto a unique, self-propelled fixture car that will carry it the 150-feet required to complete the three operations. The car is powered by a DC drive motor. It runs on two rails, picking up power from a third.

After loading the hull the operator drives the car from a special platform into the first operation which is milling the six suspension slope pads. By simply pushing a button the operator indexes the hull and the milling begins automatically. Six indexings are required.

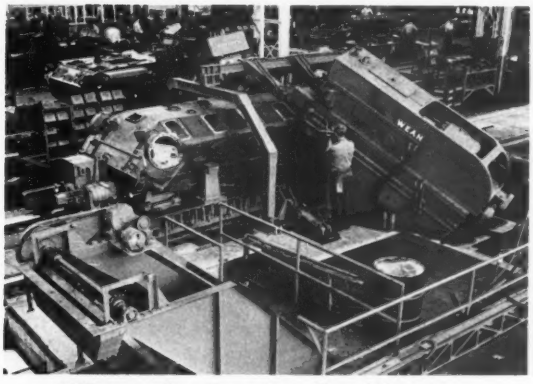
Milling through, the operator drives the car to the second station where a pattern of holes is drilled into each pad. Special pivoting spindles enables the machine to drill three separate patterns. Five indexings are required on this operation . . . all controlled by automatic push button.

Next is what Wean calls the "Boring Station." Here the face of the final drive adaptor casting is profile milled, the rear idler opening rough and finish reamed and four mounting holes drilled and tapped. Special quick-change chucks help speed the operation here.

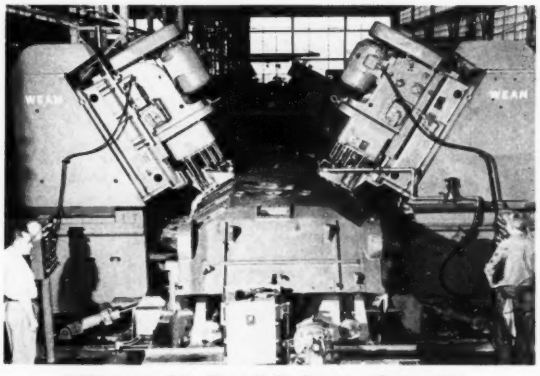
After this operation the car moves off the line where an overhead crane lifts the hull from the car. At present it requires but 2 hours to complete a hull, a speed which can be even further reduced when the occasion demands.

Wean Equipment is one of the nation's foremost organizations devoted to designing and building special machinery for industry. If you have a problem that requires "something special," be sure to let Wean know. Like Massey-Harris you'll find it's the surest and most inexpensive way to soundly engineered performance-proved solutions.

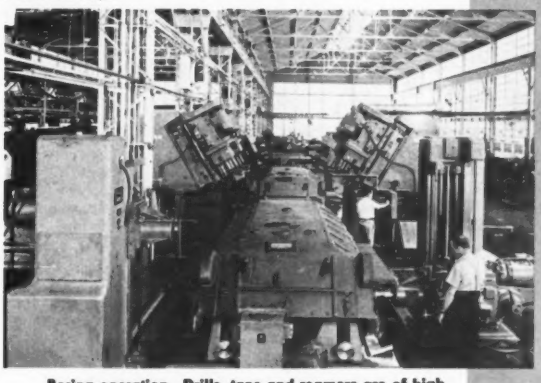
Unique trans-car that carries hull from station to station.



Milling operation. Dry cutting with carbide cutters. Air jets remove chips.



Drilling operation. Beneath the floor a coolant system with magnetic chip separator.



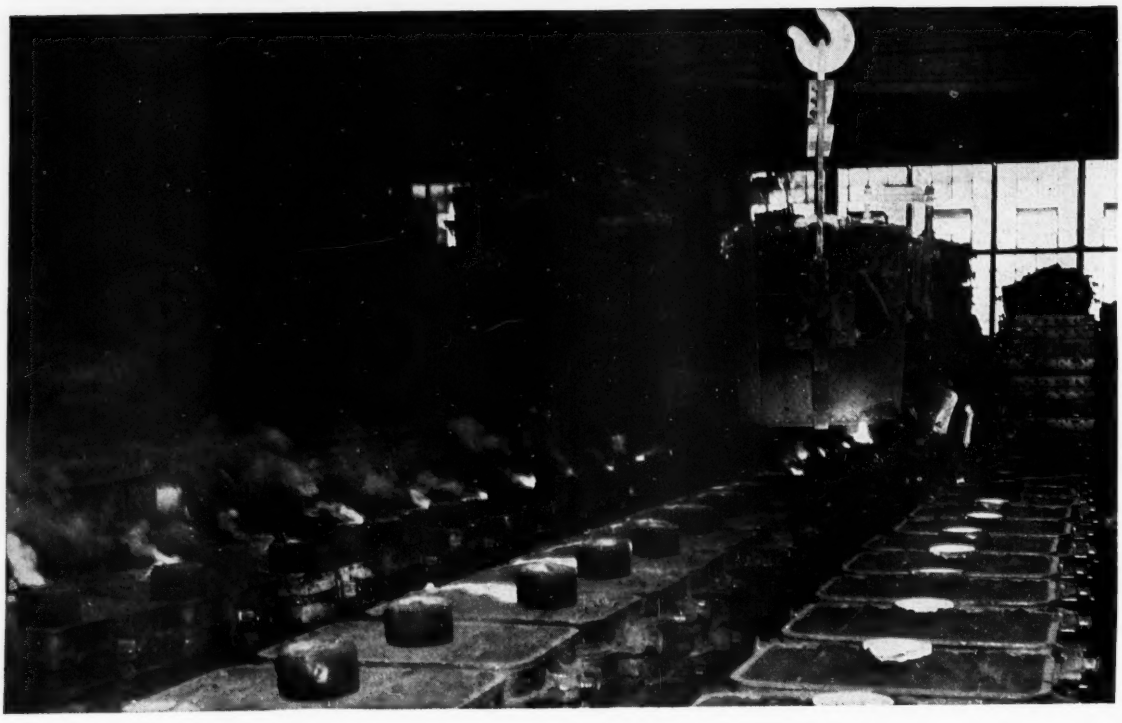
Boring operation. Drills, taps and reamers are of high speed steel. All operations are automatic.

MACHINERY TODAY IS THE BUSINESS OF THE

EQUIPMENT CORPORATION

Wean

Cleveland, Ohio



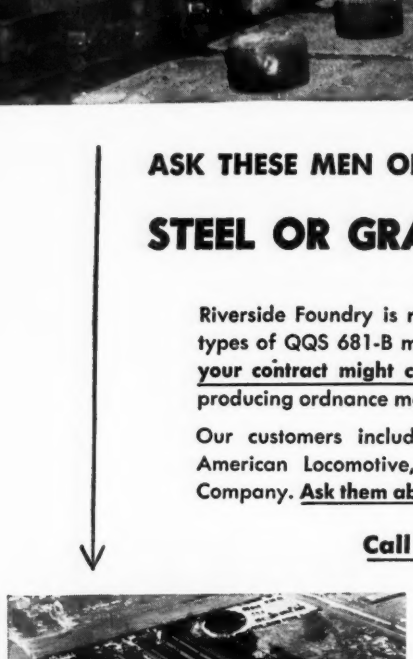
ASK THESE MEN OF RIVERSIDE TO HELP SOLVE YOUR

STEEL OR GRAY CASTING PROBLEMS

Riverside Foundry is ready to give you excellent service on cast armor and all types of QQS 681-B materials. **In fact, any steel casting specifications for which your contract might call.** We have a full staff of men who have spent years producing ordnance material.

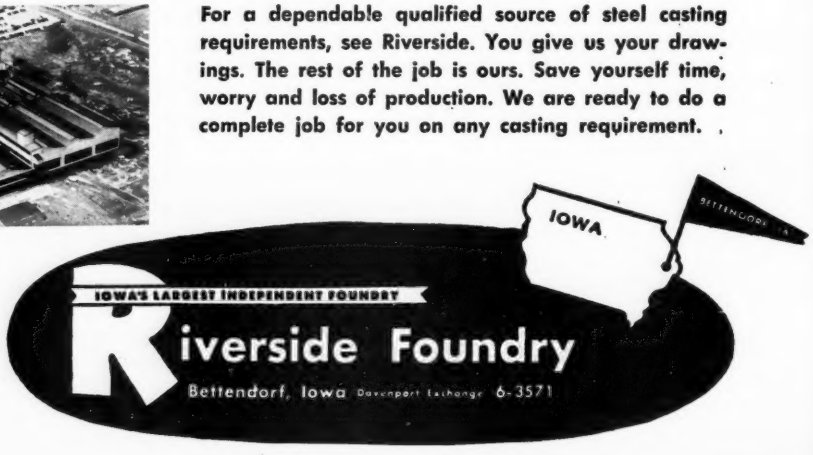
Our customers include many great names of American Industry: Chrysler, American Locomotive, International Harvester, Fisher Body and Ford Motor Company. **Ask them about Riverside.**

Call or write us at Riverside today.



The big modern Riverside Foundry at Bettendorf, Iowa has the best equipment, to do the best job.

For a dependable qualified source of steel casting requirements, see Riverside. You give us your drawings. The rest of the job is ours. Save yourself time, worry and loss of production. We are ready to do a complete job for you on any casting requirement.



Good Reflexes

STOP! WAIT just five one-thousandths of a second and then go on reading this. That time interval you just experienced is the time it takes for a new device to actuate an electric brake.

It's an electronic control and is built by Warner Electric Brake & Clutch Co., Beloit, Wis. In addition to great operating speed, it can be controlled at any distance from the brake, either by a standard wire connection or by a transmitted wave, similar to a radio wave.

Right now it's being readied for secret defense projects, but will prove suitable for industrial applications where fast, emergency electric control is needed.

Unusual feature of the controller is a twin stopping circuit. Should one circuit fail, the other will actuate the control in two ten-thousandths of a second.

sive testing and development include its use in submarine snorkel tubes, superstructure and fairwater construction, shipboard condensor and heat exchanger tubes and globe valves, aircraft landing gear, propellor blades and armor plate.

More and Better Cutting Oils

Additions and improvements in its line of nonsoluble cutting oils, which it states will provide reduced friction, superior cooling, antiweld and metal wetting characteristics, is announced by Atlantic Refining Co., Philadelphia.

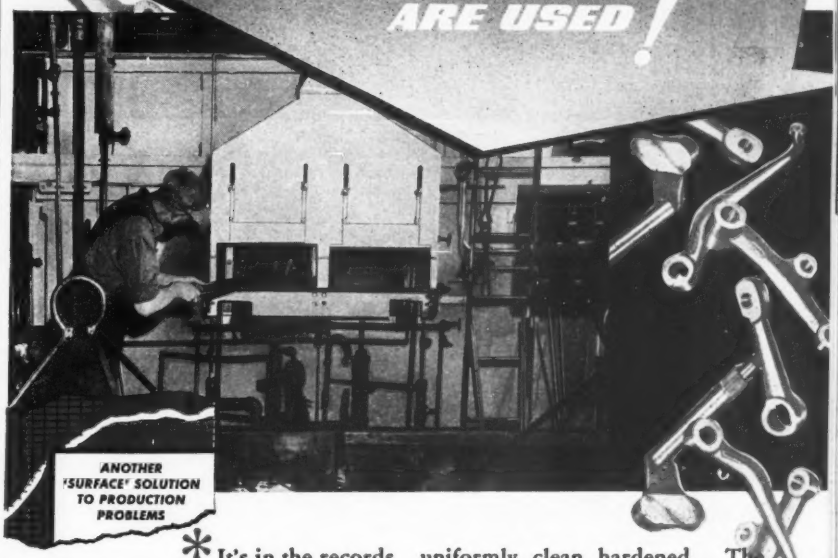
Feature of the new oils is their transparency, from light to heavy grades, one of the results obtained from the use of a new additive. Grades 20 through 45 are reported to be odor-free and will not indelibly stain hands or clothing.

Book Aids Engine Operators

Assisting operators of gas and diesel engines in keeping equipment at top operating efficiency, is the purpose of a comprehensive booklet titled "The Engine Indicator." Prepared by Cooper-Bessemer Corp., the booklet reviews the various types of engine indicators and points out their limitations.

Emphasis is made on the proper

*high production
UNIFORM RESULTS
WHENEVER
Surface
ROTARY HEARTH
FURNACES
ARE USED!



ANOTHER 'SURFACE' SOLUTION TO PRODUCTION PROBLEMS

*It's in the records of many prominent companies with mass production schedules—versatile 'Surface' Rotary Hearth Furnaces measure up to the job with *profitable results.* The experience of Ross Gear & Tool Company, Lafayette, Ind. is typical. Here, the clean hardening of steering arms and lever shafts is required.

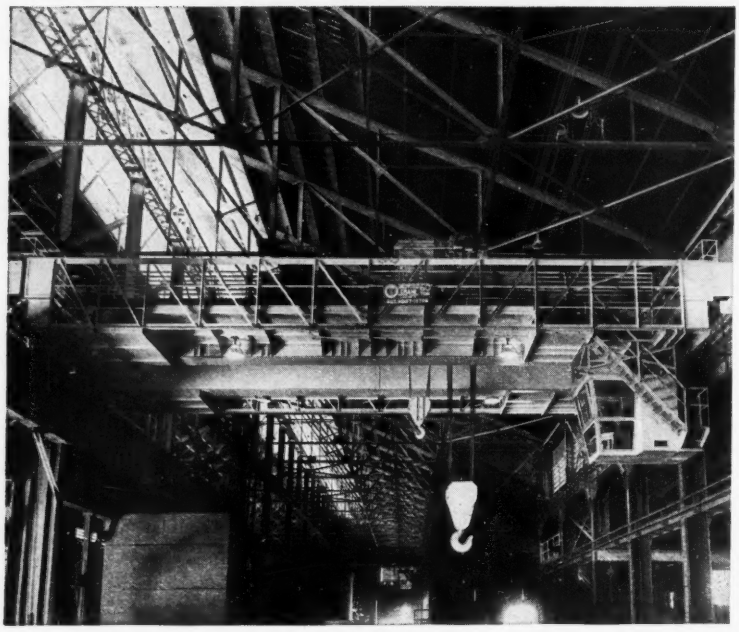
A 'Surface' Rotary Hearth Furnace equipped with radiant tubes and an RX prepared gas atmosphere does the job. Steering levers and shafts—*1,000 lbs. every hour*—are uniformly clean hardened. The furnace operates 24 hours a day and during two years of continuous service, has never been down for repairs. Only one operator is required for the operation.

For controlled atmosphere or direct-fired heat treating processes, it will pay *real dividends* to check the outstanding advantages of 'Surface' Rotary Hearth Furnaces in your production picture.

Write today for bulletin and for the full story on Ross Gear & Tool Company's experience.

SURFACE COMBUSTION Corporation
TOLEDO 1, OHIO

'Surface' INDUSTRIAL FURNACES AND BURNERS
Kathabar HUMIDITY CONDITIONING SYSTEMS
Janitrol AUTOMATIC HEATING EQUIPMENT



Sixty-ton Bedford Crane with air-conditioned cab in the new melt shop of The Timken Roller Bearing Co., Canton, Ohio. Working directly over the severe flash heat of top charging electric furnaces, it positions and dumps approximately 40 tons of scrap per swing.

Backed by 50 Years of *Specialized Experience*

The dependability of Bedford Cranes has been repeatedly proven in the past fifty years by their daily performance in heavy-industry applications in all parts of the world.

"Custom-Built" to precise specifications for each installation, Bedford Cranes are engineered to function dependably as an integral part of the user's production equipment.

A half-century of experience in designing and building cranes to exacting industry requirements . . . and the utilization of the latest production equipment, contributes to the superiority of every Bedford Crane. Owners testify to their smooth, low-cost operation; quick, positive response and rugged reliability.

Bedford Overhead Electric Traveling Cranes are available in a wide range of types and sizes from 5 tons to 350 tons . . . including the *right* unit specifically engineered for *your* application.

(Write for complete catalog describing Bedford Cranes in detail.)

BEDFORD CRANES SERVICE

BEDFORD CRANES

BEDFORD FOUNDRY & MACHINE COMPANY, INC. · BEDFORD, INDIANA

indicator and its correct application in improving performance of reciprocating engines and compressors. Copies are available from the corporation headquarters, Mt. Vernon, O. Price is $1.50.

More CO_2 Cooling Reported

CARBON dioxide, well known for its use in extinguishing fires and for refrigeration, is gaining widespread acceptance as a coolant for machining special alloys. This is the report made by Pure Carbon Co., a division of Air Reduction Co., New York.

Liquid carbon dioxide as a tool coolant has been known for many years, but the greatly increased use of special alloys has brought this procedure into general application. It is being employed as coolant for turning, milling, boring, drilling, tapping and broaching and is equally valuable in preparation of the tools for these operations.

Nozzles Vary — A refrigeration effect is obtained by releasing the high pressure carbon dioxide (850 psi at 70° F) to atmospheric pressure through a suitable nozzle. Various nozzles produce desired spray patterns such as cone, fan or pin point.

Among the advantages reported are longer tool life, little or no work hardening, finer finish, less buildup on tool, higher speeds.

X-Ray Firm Publishes Catalog

Of interest to plants using radiography or fluoroscopy in nondestructive testing and examination of parts is a catalog published by Keleket X-Ray Corp., Covington, Ky.

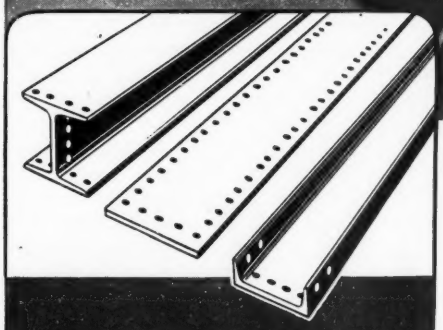
Items covered range from a stirring rod used in mix developing solutions to lead building blocks, used in construction of special x-ray rooms. Copies are available free for those requests made on company stationery.

Management Folder Available

A four-page folder titled "Requirements of Good Management" is available from the industrial and management engineering firm, Harold F. Howard Co., Detroit.

Covered in the folder are such subjects as what makes a good executive, important management

...It's New ...It's Flexible ...It's Economical



This new Spacing Table-Beam Punch Combination handles beams, channels, angles and cover plates with a minimum of tool changing and maximum economy.

Built in various tonnages and lengths to meet your needs

. . . a motorized THOMAS Indicator Spacing Machine

designed for the smaller fabricating shop

THOMAS . . for years the leader in the development of spacing machines . . now offers a fitting companion to the famous Thomas Automatic, used in practically all major high-production shops. It's the Thomas Motorized Indicator Spacing Machine, specially designed with traditional Thomas quality features, to meet the needs of the smaller fabricating shop.

THE TREND IS TO THOMAS

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BY GOSH, SHE'S RIGHT! THE TOOL ROOM FURNACE AFFECTS THE COST OF EVERY PRODUCTION OPERATION!
SHE SEES A DELAWARE FURNACE...WITH SIMPLIFIED CONTROLLED ATMOSPHERE. NO SCALE - NO DECARBURIZATION...THUS NO MACHINING OR GRINDING AFTERWARD.
DELAWARE
ACCURATE TEMPERATURES 1200-2800°F. HANDLES EVERY STEEL-CARBON To "HIGH SPEED"
-AND IT'S LOW COST, TOO!

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Your tool room furnace does affect direct production costs . . . and tool costs. Get the facts about the DELAWARE Controlled Atmosphere FURNACE. Send for Bulletin F-1.

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FURNACE DIVISION

DELAWARE TOOL STEEL CORPORATION

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NON-FLUID OIL

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Reduces Motor Stoppages To Minimum

With its exclusive adhesive properties, NON-FLUID OIL does not creep or throw onto armatures to cause burnt-out windings from oil-soaked insulation. Motors run cooler and stoppages are reduced to an absolute minimum. You save on oil bills too because NON-FLUID OIL lubricates until entirely used up outlasting ordinary lubricants 3 to 5 times.

Also available are grades and densities of NON-FLUID OIL *for all types of ball bearing motors.*

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traits, and what is good management. Ten major requirements of industrial management are listed and discussed.

Aircraft Casting Expands

Essentials: Design know-how, better interchange between casting makers and users

PRECISION investment casting, a process using the lost-wax technique in the casting of metal parts, has become an important tool in production of modern aircraft mechanisms. So say Arthur C. Williams of Crucible Steel Co. of America and Joseph H. Massa of Republic Aviation Corp. in a special paper published recently.

The peculiar problem of the aircraft industry concerns the fact that when it designs mechanisms it must think in terms of limited space, minimum weight and low factors of safety, the authors state. To meet these requirements compact mechanisms must be designed with small intricate parts difficult to fabricate by machining or other conventional methods. These components, the authors point out, are "often ideally suited to employment of investment castings of high strength steels."

First Essential—But the successful application of investment castings in aircraft requires first of all a thorough working knowledge on the part of aircraft designers and engineers of what investment casting can do, the writers point out. The paper written jointly by the two men, is titled "Application of Precision Investment Castings in Aircraft Structural Parts Designs."

Expanding on the need for an interchange of knowledge the authors assert this is particularly true between makers and users of investment castings. At a minimum, aircraft designers and engineers must know "dimensional tolerances that can be held, casting hazards and mechanical properties of various kinds of steel in investment cast form."

Early Consultation—"This information," the paper states, "can best be acquired through consultation by design engineers with casting producers before designs are completed."

The subject of mechanical cast-

ONE always stands out...

IN refractory dolomites it's...

BAKER'S MAGDOLITE

The J. E. Baker Company takes pride in announcing the completion of its new, modern plant in York, Pennsylvania. This new operation, supplementing our other plants in Eastern Pennsylvania and Ohio, will enable us to meet the increased demand for dolomite necessitated by the tremendous expansion of the steel industry. Yes, we can now assure you of the kind of dependable dolomite shipments that the people in the steel industry have needed — and to a larger area.

The superior quality of this new source of dolomite means the continuance of BAKER'S MAGDOLITE'S leadership within the industry . . . and guarantees top performance for you. Yes, those who know insist on BAKER'S MAGDOLITE . . . the original deadburned dolomite!

ALWAYS 5 WAYS BETTER—Composition • Preparation • Strength • Economy • Quality

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PLANTS: York, Pennsylvania • Millersville, Ohio

Why does this steel fabricator depend on U. S. Rubber grinding wheels?

A jet air nozzle gets its openings ground out by a special U.S. Royalite Cone Wheel.

YOU'RE looking, above, into an integral part of a new air duct for a steel mill. Before this part is assembled, it needs the expert finishing of a U.S. Rubber grinding wheel. For this weld-grinding the workman is using a U.S. Royalite® straight side wheel. For your particular operation, there's always a "U.S." grinding wheel to do the job more efficiently at lower cost. "U.S." technicians will design specialized wheels when required. Write to address below.

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ing properties is believed to be the least understood, according to the writers. They caution that except for high temperature alloys and some stainless grades, there are no specifications covering mechanical properties of investment castings in existence. And, sand casting specifications cannot be used to govern the mechanical properties of investment castings.

"One common mistake made by designers unfamiliar with investment castings," the paper points out, "is to use wrought steel specifications in the absence of casting specs. Tensile test properties attainable in investment castings are not equal to those in wrought form in the same steel grade," the writers note. The article contains a table illustrating this point by comparing wrought and casting specifications with actual casting tensile test results.

Quality Control Procedure—The problem of fabricating an aircraft structural part in an investment casting with the low margins of safety required by design engineers makes it imperative that proper quality control procedures are used. These procedures are outlined by the authors in detail by taking an actual case history of two component parts.

How these parts are produced and how quality control is maintained is traced step by step from the design stage through to the finished casting.

Machine Mills Jet Housings

A machine designed to mill the inside flange faces of jet housings is a recent development of Pioneer Tool & Engineering Co., Chicago. Automatic air cylinders are used for clamping the housing against holding faces, and each milling head automatically oscillates six times within the machining process, to clear outside ribs.

Book Explains Optical Devices

Functions and general applications of seven types of optical instruments that aid production and quality control in industry are described in a brochure published by Bausch & Lomb Optical Co., Rochester. N. Y.

The eight-page booklet is illustrated with photographs, drawings,

Are you SURE you're using THE MOST EFFICIENT FINISH?
If your production involves finishing zinc, cadmium, aluminum or cuprous metals, you owe it to yourself... and your customers... to investigate
IRIDITE
for on any of these metals Iridite gives you a high performance finish at a low cost from a simple chemical dip.
IF YOU WANT HIGH CORROSION RESISTANCE,
you'll find an Iridite that will meet any military or civilian specifications for chromate finishing.
IF PAINT ADHERENCE IS IMPORTANT,
you'll find Iridite prevents underfilm corrosion and soap formation.
OR, FOR BRIGHT, DECORATIVE FINISHES—
investigate zinc plate and Iridite (Bright) for a chrome-like decorative finish with more corrosion protection than conventional chrome plating . . . or Iridite (Metcote) as a treatment for copper that eliminates the need for buffing in the copper-chrome system; produces a sparkling bright finish!
Write for literature and send us samples for test processing. See "Plating Supplies" in your classified telephone directory or write direct.
Iridite is approved under government specifications.
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for Corrosion Protection and Paint Systems on Non-Ferrous Metals; ARP Plating Brighteners.
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15,000-TON FORGING press recently installed in its own building at the Cleveland plant.

WHERE DO WE START TALKING TO YOU ABOUT FORGINGS?

We suspect that a lot of people think Alcoa only smelts and refines aluminum. If you are one of these, we should tell you first that Alcoa makes almost everything in aluminum—including forgings. We have big forge shops in Cleveland, Ohio; Vernon, California; and New Kensington, Pennsylvania. In fact, these are the largest aluminum forging facilities in the country. They have been making forgings for 30 years . . . backed by Alcoa's 64 years of aluminum experience.

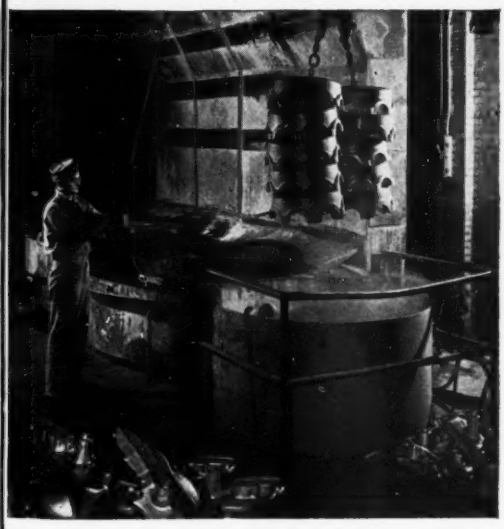
On the other hand, if you know that Alcoa makes forgings, perhaps we should begin by telling you that we make *all types and sizes* of forgings in *both* aluminum and magnesium. In addition to the personal help of your local Alcoa sales engineer, the facilities of the world's greatest aluminum research laboratories are at your disposal. You will find your local Alcoa sales office listed under "Aluminum" in the classified phone directory.

ALUMINUM COMPANY OF AMERICA 861-L Gulf Building

LARGE HAND FORGINGS are handled with a power-driven manipulator at Alcoa's Cleveland, Ohio, plant.

FORGING HAMMER forming an aircraft propeller blade.

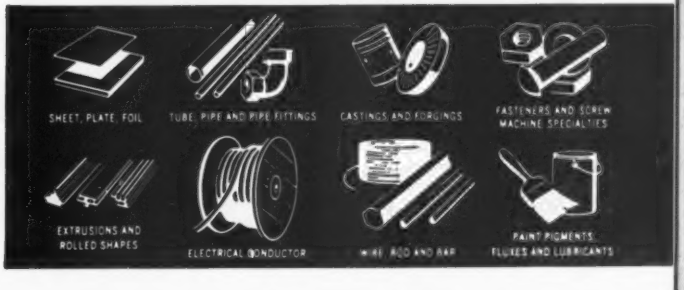
DIE SINKING an impression in a steel block. The automatic duplicating machine reproduces the shape of the plaster model mounted above the die.



ETCHING crankcase forgings for final inspection. Magnesium forgings are also given a special oxide coating to preserve them from corrosion during storage and shipment.

ASK ALCOA FIRST
WHATEVER YOUR NEED IN ALUMINUM

Your local Alcoa sales office is headquarters for "everything" in aluminum. Look for Alcoa under "Aluminum" in your classified phone book.



Pittsburgh 19, Pennsylvania

ALCOA ALUMINUM

IS THERE A DIFFERENCE IN ABRASIVE LIFE?

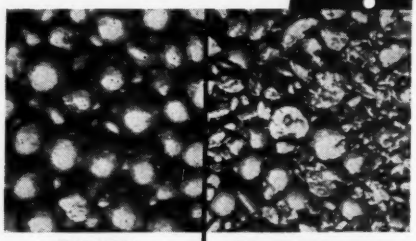
With all manufacturers claiming longer life for their abrasives, it's time to review the facts. Iron shot is still iron.

Through annealing, drawing and other processes the life of some chilled iron abrasives has been increased so they can be sold as premium abrasives. BUT iron shot DOES NOT HAVE THE LIFE OF STEEL.

Only Tru-Steel Shot has the toughness and life of true steel. It is made of high carbon steel that has received a full heat treatment. That's why Tru-Steel Shot maintains its size and shape longer, giving many more hours of efficient blast cleaning.

LIFE COMPARISON

Tru-Steel retains its shape after 1500 passes. Chilled Iron breaks down after only 50 passes.



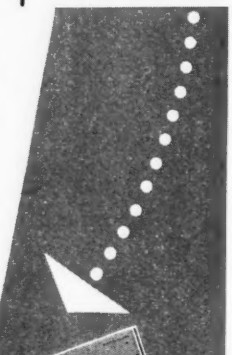
TRU-STEEL *No. 230 at Mag. 10X*

CHILLED IRON SHOT *No. 230 at Mag. 10X*

Other premium abrasives claim long life too but comparative tests prove Tru-Steel's superiority. For example, the results of a typical test made by a prominent manufacturer show the following cost per hour:

Abrasive "A"	**$ .67**	**Abrasive "B"**	**$ .978**
Abrasive "C"	**$1.33**	**Tru-Steel**	**$ .467**

Profit by the results obtained by satisfied Tru-Steel users. Send in a trial order today — prove for yourself how you too can save.



GET THE FACTS – *Bulletin 59-A shows where the average cleaning dollar is spent and how savings can be made. Send for your copy today.*

American WHEELABRATOR & EQUIPMENT CORP.

TRU-STEEL SHOT

509 S. Byrkit St., Mishawaka, Ind.

and technical data. It describes use of contour measuring projectors, stereomicroscopes, toolmaker's microscopes, thickness gages and other optical instruments that may be used as separate units or built into present equipment.

Steel Cuts Alloy Requirements

Development of a ferritic or relatively low alloy steel for high temperature applications is announced by Crucible Steel Co. of America, Pittsburgh.

Designated as Crucible 422, the new steel is reported to satisfy the design engineers' need for high strength bolts and blades in modern steam and gas turbines.

Savings of alloy materials in the interests of national defense is an important advantage. Type 422 contains less than 1 per cent nickel, which is in short supply, and only small amounts of vanadium, molybdenum and tungsten. Its principle alloy content is 13 per cent chromium.

Storage Condensation Stopped

Atmospheric condensation, affecting food, steel, furniture, and other damageable items in storage, can be avoided by an automatic control system which keeps the temperature of the stored material above the dew point of the air. The temperature controller is a development of Foxboro Co., Foxboro, Mass.

Operating in a warehouse, the device measures the air temperature (or the temperature of the stored material) and the dew point of the air. When the temperature of the material approaches the dew point, the instrument positions valves in the heating system to prevent moisture formation.

Wet Blast Cleaner Added

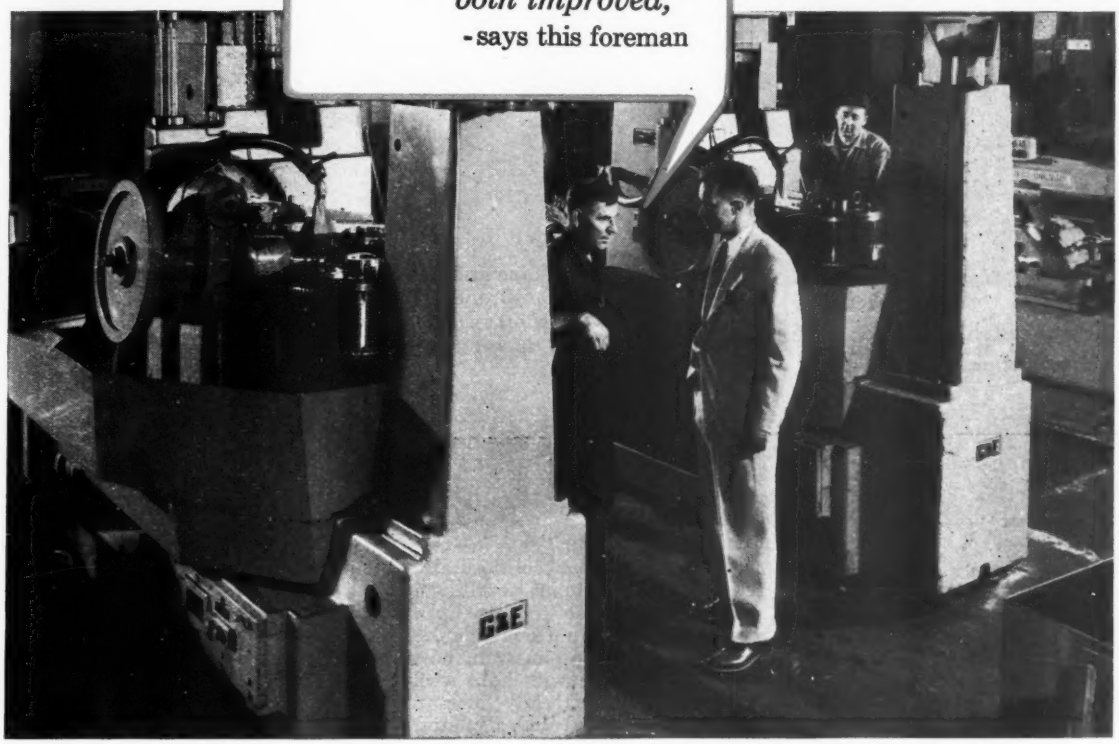
Addition of a new model to its line of wet blasting machines is announced by American Wheelabrator & Equipment Corp., Mishawaka, Ind.

Known as the model 64 Liquamatte, it is intended for all precision cleaning and finishing applications involving large and heavy pieces. Typical applications are in the manufacture and maintenance of forging dies, die-cast-

alloy steel drive gears for M-47 tank

hob better with GULF ELECTRO CUTTING OIL!

"Hob life and tooth finish both improved," -says this foreman



Operation—cutting involute teeth on alloy steel spur gears, Gould and Eberhardt Gear Hobbers; results with Gulf Electro Cutting Oil—Hob life increased 20%, scuff marks eliminated on gear teeth, and hob grinding costs reduced.

Here's the important reason why Gulf Electro Cutting Oil produces outstanding results like these: Thanks to a special Gulf process of combining sulphur, it provides greater sulphur activity over the entire range of a cutting operation. This means longer tool life and better finishes.

Call in a Gulf Sales Engineer today and arrange to use this quality cutting oil on your tough machining operations, or send the coupon below for additional information.

GULF SERVES INDUSTRY

Gulf Oil Corporation · Gulf Refining Company S
719 Gulf Building, Pittsburgh 30, Pa.

Please send me, without obligation, a copy of your pamphlet "Gulf Electro Cutting Oil."

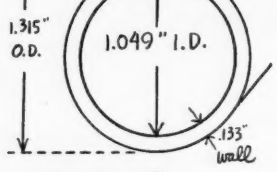
Name.....

Company.....

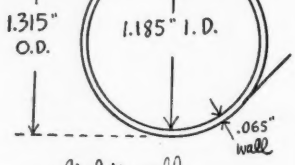
Title.....

Address.....

here's what you gain with stainless schedule 5 pipe

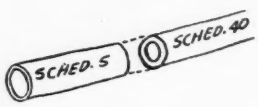


heavy wall schedule 40



light wall Schedule 5

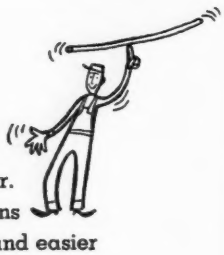
You save money. Schedule 5 pipe costs about half as much per foot as Schedule 40.



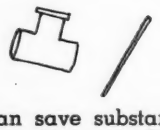
Schedule 5 has the same O.D. as Schedules 10, 40 and 80 —for hook-up with existing lines as well as for new installations.

20% to 27% greater capacity

Its larger I.D. increases flow and capacity in pipelines, exchangers and other equipment.



It's lighter. This means quicker and easier installation.



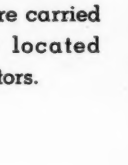
You can save substantially on valves, fittings, weld rods, etc., because smaller O.D. material can frequently be used. Tubing sizes can now be replaced with light wall pipe . . . for ready hook-up with standard valves, pumps, and other equipment normally manufactured in pipe sizes.

Fittings as well as stocks of Schedule 5 pipe are carried by conveniently located Carpenter distributors.

Specify Schedule 5 pipe . . . it saves dollars . . . and makes a lot of sense!

THE CARPENTER STEEL COMPANY
Alloy Tube Division, Union, N. J.
Export Dept : The Carpenter Steel Co., Port Washington, N.Y. "CARSTEELCO"

Data Sheets give you complete information about Carpenter Schedule 5 Stainless Pipe. Write for your personal copy.



THE U.S. NEEDS YOUR STEEL SCRAP NOW

Carpenter

STAINLESS TUBING & PIPE

Analysis → Tolerance → Finish →

- guaranteed on every shipment

ing dies and drawing dies; in the manufacture and maintenance of glass, plastic and rubber molds; and in other similar applications.

Unloaders for Fairless

Two structures each handle three bucket sizes for moving ore and coal

SHIPS carrying raw materials for steel production at U. S. Steel Co.'s Fairless Works near Morrisville, Pa., will be unloaded by two specially-designed structures being built by Dravo Corp.'s Engineering Works Division.

The unloaders are identical in size and can be used to unload either iron ore or coal from vessels docked in a slip off the Delaware river. The structural steel unloaders move on rails alongside the slip. Erection of the structures is being done by American Bridge Division, U. S. Steel Co.

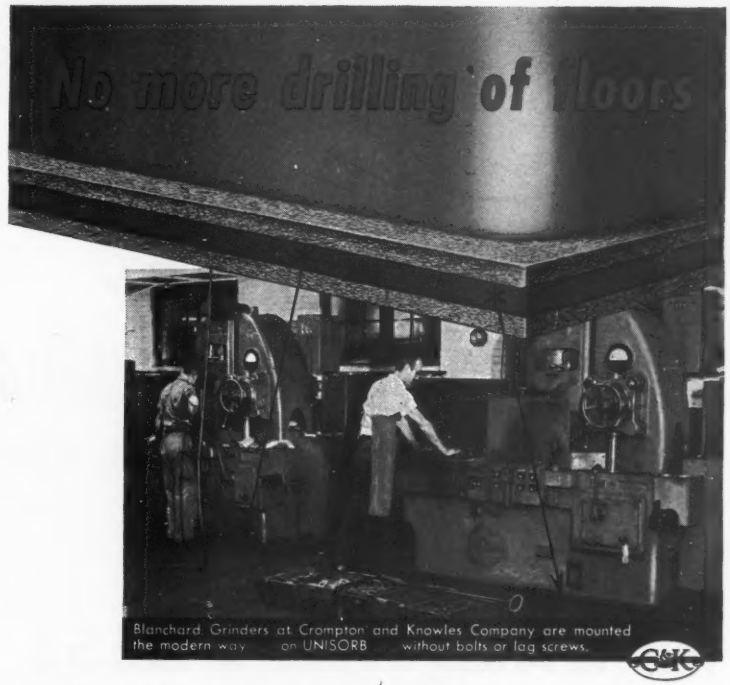
Three Bucket Sizes—The unloaders each are equipped to handle three sizes of buckets for digging material from the holds of vessels. One bucket is a standard 15-net-ton capacity unit for ore; the second is an auxiliary 7½-ton ore bucket; and the third, a 10-ton coal bucket. Jaws of the largest bucket are 25 feet wide.

Built within the framework of the tower are four receiving hoppers. Two of them, 101 tons capacity each, are for loading ore into rail cars. The other two feed to conveyor belts, one for coal and the other for ore.

The main tower supports a boom, or apron, that extends over the water 109 feet and carries the bucket trolley and operator's cab. The boom is 69 feet above the yard level. It extends out from the back of the tower 93 feet so that ore may be unloaded and moved to within operating range of a stockpiling ore bridge behind the unloader.

Hinged Boom—The tower rides on four electrically-driven eight-wheel trucks, one on each corner. Dravo automatic, magnetic rail clamps are installed to hold the tower stationary in high winds by gripping the rails.

Total capacity of the electric motors that open, close and lift the buckets, power the tower trucks,



Blanchard Grinders at Crompton and Knowles Company are mounted the modern way on UNISORB without bolts or lag screws.

C&K

When You Anchor Machinery On...

UNISORB®

You can say "good-bye" to uneconomical bolt-and-lag-screw mounting methods when you use UNISORB mounting. We supply a special cement which securely bonds the UNISORB pads to machine feet and floor with a holding strength of at least 90 lbs. per square inch.

UNISORB is ideal for any kind of machinery . . . on any kind of flooring.

What's more, UNISORB does away with 60%-85% of all transmitted machine vibration and noise . . . prolongs life of machinery, buildings and floors . . . improves worker morale and efficiency . . . permits maximum machine speeds, higher output.

UNISORB is also available pre-coated with adhesive, but is not recommended for use with machines that require shimming.

You Reduce VIBRATION NOISE MAINTENANCE

with UNISORB Mountings

- no bolts, no lag screws, no holes to be drilled, no floor damage.
- Felters adhesive holds for keeps, yet permits re-positioning of machines. (Our UNISORB Booklet tells you how.)

VISIT OUR BOOTH PLANT MAINTENANCE SHOW CLEVELAND JAN. 19-23, 1953

THE FELTERS COMPANY

210-Q SOUTH STREET, BOSTON 11, MASS.

Offices: New York, Philadelphia, Chicago, Detroit, St. Louis
Sales Representative: San Francisco
Mills: Johnson City, New York; Millbury, Mass.; Jackson, Mich.

REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

MAIL COUPON FOR FREE BOOKLET TODAY

Please send my free copy of the booklet containing the complete story of UNISORB Mounting.

NAME..... TITLE.....
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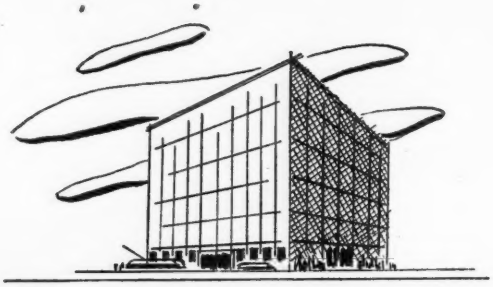
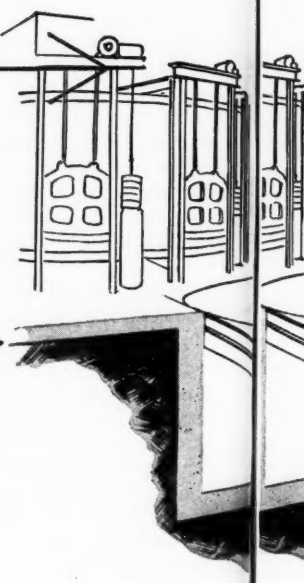


High as a six story building...



An example of the problems that Baldwin engineers solve is the design of this 11,000-ton split die forging press for Cameron Iron Works, Inc. The power to forge parts weighing up to 2,000-pounds had to be designed into certain physical limits and distributed in the frame of the press.

this BALDWIN PRESS will

This is the largest of its type ever built and is at the same time one of the most versatile. It is possible to clamp split dies either horizontally or vertically and pierce either horizontally or vertically at the same time. The force of the rams is adjustable by simple controls, thus limiting the size of dies to that required for any particular load.

produce intricate forgings

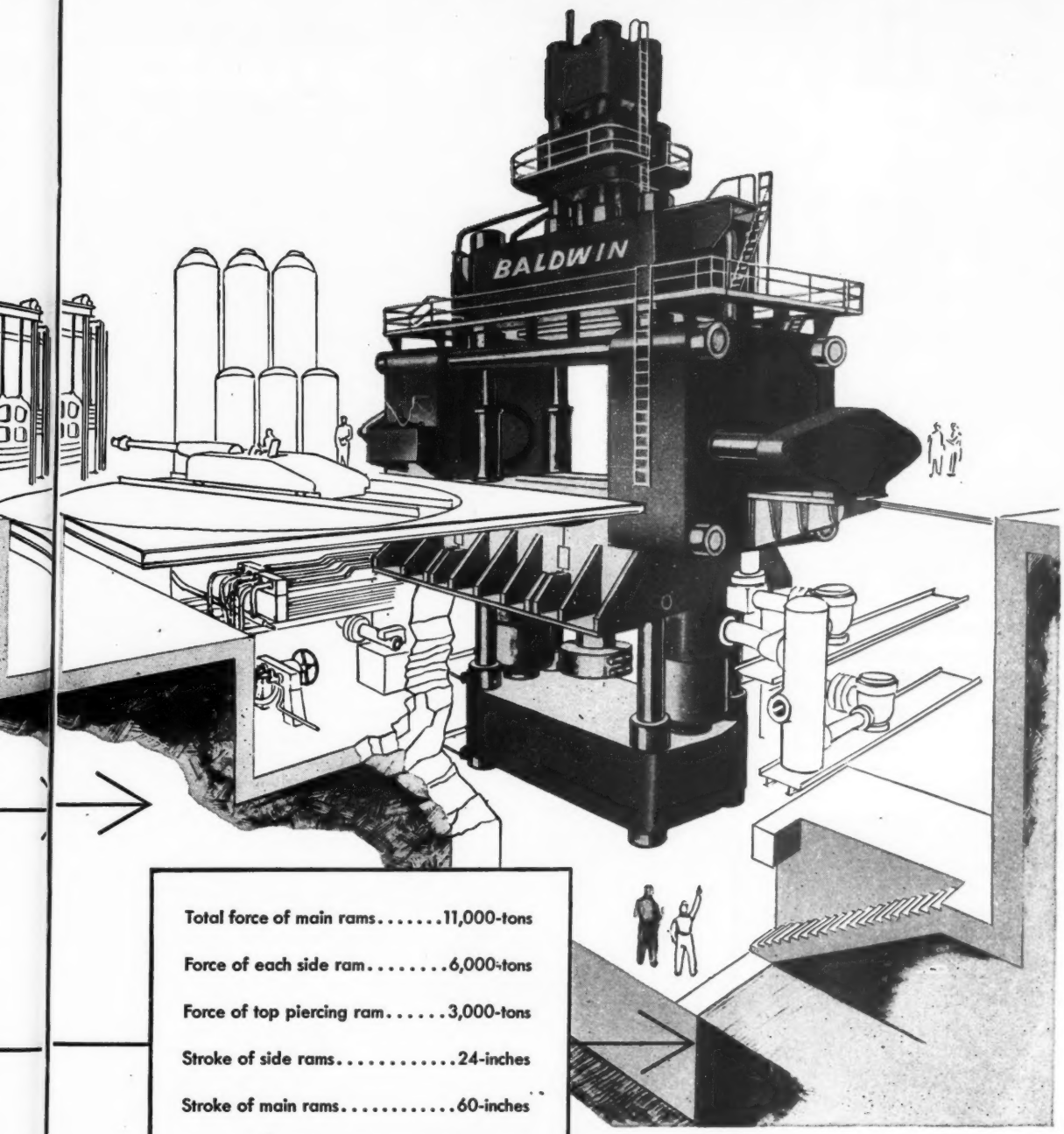
Dies are mounted on 10 x 10-foot bolsters in the vertical press opening which is 12-feet maximum and 7-feet minimum. The horizontal press opening between ram faces is 15½-feet. A piercing ram is superimposed on the moving top platen and a knockout ram mounted in the bed.

to withstand 15,000 psi.

No matter what size press you need, you'll find Baldwin engineers can bring extra experience to bear on your problems. With the result that Baldwin press designs will give you better control and better products—that there will be a built-in smoothness and ruggedness that will lower maintenance costs.

BALDWIN BLH LIMA-HAMILTON

BALDWIN



Total force of main rams.....11,000-tons

Force of each side ram.....6,000-tons

Force of top piercing ram.....3,000-tons

Stroke of side rams.....24-inches

Stroke of main rams.....60-inches

Approximate weight of press, 3,100,000-lbs.

-LIMA-HAMILTON

General Offices: Philadelphia 42, Pa. • Offices in Principal Cities

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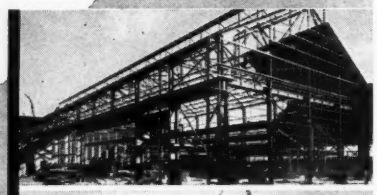
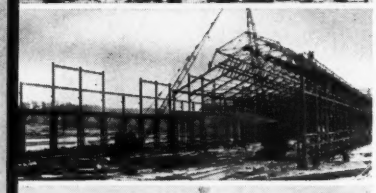



Fort Pitt BRIDGE WORKS
Member American Institute of Steel Construction
GENERAL OFFICES: PITTSBURGH, PA.
"Steel Permits Streamlining Construction with Safety, Endurance and Economy"
PLANT AT: CANONSBURG, PA.
DISTRICT OFFICES: NEW YORK, N. Y. • CLEVELAND, OHIO • DETROIT, MICHIGAN

rail clamps, trolley, hopper gates, turntable, and boom, is 968½ hp.

Proton Gun Sorts Elements

MINUTE quantities of elements are identified and measured by proton bombardment at Stanford Research Institute, Stanford, Calif. Called the proton bombarder, the analyzer can detect an element in any amount weighing as little as one thirty-trillionth of an ounce.

The method evolved from atom-smashing research except that the protons in the new analyzer, traveling at lesser speeds, bounce off the atoms without changing them. Protons reaching the atomic nuclei are bounced out again, losing some velocity in the process. It is this loss which identifies the atoms.

Rebound Important — Since an atom is the smallest particle of any element that can still be recognized as the element, the various atoms will have different weights. Difference in rebound velocity of the protons gives a measure of atomic identification, and a count of the relative number of rebounds of like velocity indicates the proportional composition of the substance.

Since the substance is unaltered by the analysis, only a small spot of the surface is needed for sampling. In addition, the analyzer, with its various components, plots out a curve showing all the elements and their proportions found in the sample.

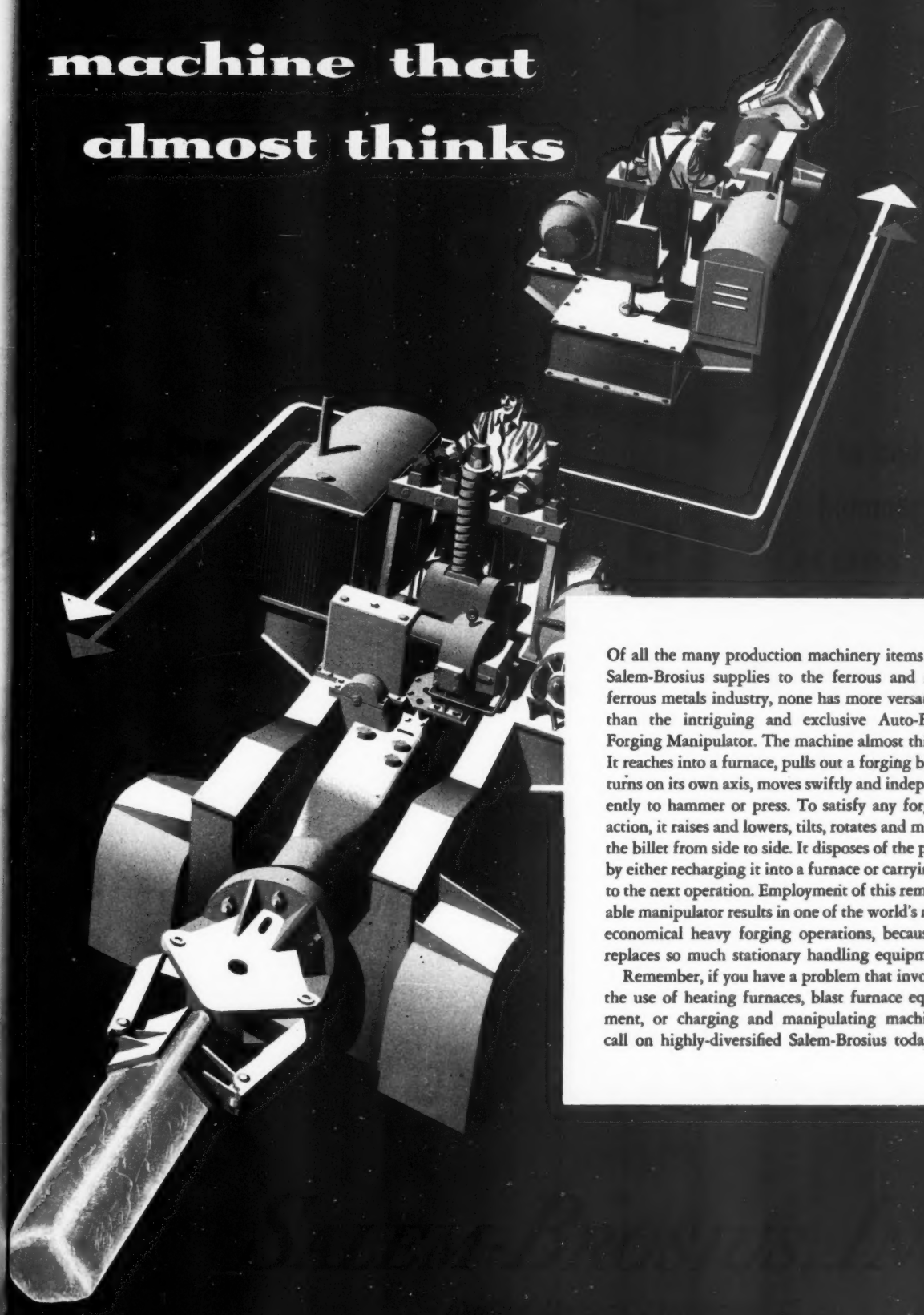
Many Applications — The institute will shortly use its analyzer to study the properties and surface behaviors of various metals. One application is to test metallic structures of alloys for the Ordnance Department of the Army.

Later industrial applications will probably include studies of lubricants, coatings and finishes, and analysis of surface contaminations or of minute unknown samples.

New Welding School Catalog

A booklet describing the various courses and facilities of the Lincoln School of Welding is available from Lincoln Electric Co., Cleveland 17. In its 35th year of operation, the school was organized to train World War I soldiers in the art of welding.

machine that almost thinks



Of all the many production machinery items that Salem-Brosius supplies to the ferrous and non-ferrous metals industry, none has more versatility than the intriguing and exclusive Auto-Floor Forging Manipulator. The machine almost thinks. It reaches into a furnace, pulls out a forging billet, turns on its own axis, moves swiftly and independently to hammer or press. To satisfy any forging action, it raises and lowers, tilts, rotates and moves the billet from side to side. It disposes of the piece by either recharging it into a furnace or carrying it to the next operation. Employment of this remarkable manipulator results in one of the world's most economical heavy forging operations, because it replaces so much stationary handling equipment.

Remember, if you have a problem that involves the use of heating furnaces, blast furnace equipment, or charging and manipulating machines, call on highly-diversified Salem-Brosius today.

How to shackle this steel production thief

EXCESSIVE down-time in open hearth steel furnaces—a costly thief of steel production—can be shackled by Permanente 165 *periclase* ramming mix.

Patented Permanente 165 bonds itself to *full depth* by means of crystal-bridging. A ceramic bond begins forming at temperatures as low as 1500°F. Thus a deeper bond is obtained at normal burn-in temperatures—with no formation of fluids.

Permanente 165 *retains higher refractoriness* during long campaigns. Accurately-sized, preshrunk sea water magnesia periclase grains insure *high density*.

As a result, Permanente 165 gives you a dense, highly refractory bottom of high hot load strength that minimizes breakthroughs. And down-time for repairs between heats is cut to a minimum. This means increased production time, increased tonnage per year.

YOUR Kaiser refractory engineer will give prompt attention to your refractory problem—will offer, where desired, research, design and installation service to give you maximum production most economically. Write for descriptive literature on Permanente 165 and on the companion ramming mix, Permanente 84. Principal sales offices: *Chemical Division*, Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California. First National Tower, Akron 8, Ohio.

Kaiser Chemicals

Pioneers in Modern Basic Refractories

Basic Refractory Brick and Ramming Materials • Dolomite • Magnesia • Magnesite • Alumina • Periclase

Jet Reheat Pump Redesigned

A tank-mounted turbo-pump suitable for instantly supplying the extra supply of fuel which jet engines require for reheat operation is announced by General Electric's Aircraft Gas Turbine Division, Schenectady, N. Y.

Driven by high pressure air from the jet engine's compressor, the pump combines boost, high pressure, and vapor separator elements in one package. This unit replaces the heavier and more complex line mounted pump and electrically-driven booster-pump combination.

The pump is designed around the dual-rotor system that involves two separate turbine wheels which have no mechanical interconnection. One turbine drives the vapor separator and the low pressure boost pump, and the other turbine drives the high pressure pump element.

One of the outstanding features of the new pump is that there is absence of mechanical connection with the engine. Only a pneumatic connction is needed, thus leaving an engine-driven gear pad available for other service.

Machine Finishes Bearing Caps

A 19-station automatic transfer machine for processing main bearing caps in clusters and delivering individual workpieces, sawed apart and automatically sorted at the rate of 96 pieces per hour, is a development of Snyder Tool & Engineering Co., Detroit.

The workpiece, as it enters the machine at the loading station, is a main bearing cap cluster for a V-8 engine. Processing consists of drilling, reaming, spotfacing, tapping holes, milling anchor slots, sawing the cluster into individual caps and sorting the finished parts.

Plymetal Shims Cut Brazing Cost

Use of plymetal shims for brazing carbide tool tips has become an important method adopted by U. S. metal manufacturers, in many instances replacing the sandwich brazing technique, according to American Platinum Works, Newark, N. J.

Drastic reductions in brazing costs and increased production

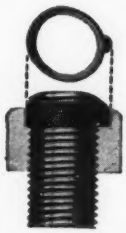
THERE IS NO OTHER FASTENER LIKE THIS!

IF YOU are one of those people who believes a cotter pin is the only way to hold anything positively on a shaft you will be surprised at tests made on Security Locknuts. Authoritative tests have proved Security Locknuts practically vibration proof.

Security Locknuts stay "put" where you wrench them even in the face of vibration that destroys the bolt. They permit accurate adjustments with a torque wrench. They are complete as a unit. There is nothing to line up. Installation involves only one operation and there are no holes to weaken the bolt or stud.

Security Nuts can be adjusted and re-adjusted any number of times but more important, they can be *removed and re-used over and over again without materially losing their locking power and without damage to the bolt.* We'd like to have you see the results of these tests. If you have a vibration or fastener problem, Security Locknuts are a dependable solution and may save you money over methods you are now using.

Security Locknuts are made in 3/8 in. to 3 in. bolt sizes. Ask to see the Security Locknut Tests.



The picture above shows a cross-section of a Security Locknut. The insert, indicated removed, is of high quality heat treated, alloy spring steel and becomes a permanent part of the nut.

The insert is elliptical in shape and this design causes the retainer to grip the bolt with the terrific tension that only spring steel of great strength could exert and prevent the nut from turning. Simple — dependable — positive!

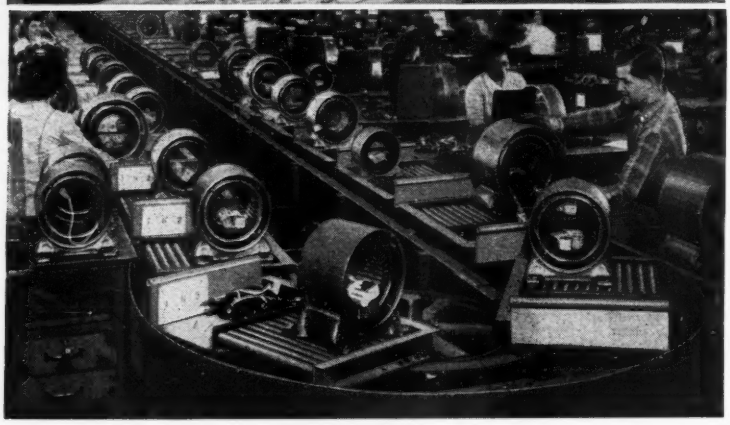
SECURITY LOCKNUT CORPORATION
North Ave. and 15th Ave., Melrose Park, Ill.

Security
The Nut You Can't Shake Loose

SPECIAL OFFER! Here's an easy way to arrive at thread tolerance figures. Ask for a Security Thread Tolerance Chart. Just spin the dial and you have the figure you need. Send the coupon. It's yours for the asking.

SECURITY LOCKNUT CORPORATION
North Ave. and 15th Ave., Melrose Park, Ill.
Please send me without obligation:
☐ One of your Thread Tolerance Charts.
☐ We have a fastener problem and would like to know more about Security Locknuts.

Company Name .....
Address .....
Town ..... Zone ..... State .....
Signed .....



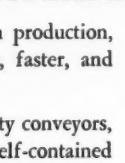
Standard Conveyors can speed operations

Keeping things moving — avoiding "bottle-necks" — on production, assembly, processing or packaging lines can be done better, faster, and cheaper *mechanically* with conveyors.

Your needs in conveyors — ranging from power and gravity conveyors, roller, belt, slat, chain, push-bar, sectional — to portable, self-contained conveyors — spiral chutes — pneumatic tube systems — can be met at Standard, with a conveyor experience record of more than 45 years. Write — Address Dept. ST112.

STANDARD CONVEYOR COMPANY
General Offices: North St. Paul, Minnesota
Sales and Service in Principal Cities

Write Dept. ST112 for Standard's General Catalog and tell us what you want to convey.



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PORTABLE CONVEYOR UNITS:
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VERTICAL LIFTS • PNEUMATIC TUBE SYSTEMS

Metal Thermometer

CLOSE TOLERANCE measurement can depend on close temperature measurement of either the gage blocks or the work or both. A new portable temperature measuring device, about the size of a snapshot camera will report these temperatures quickly.

Standard model is calibrated from 60 to 100° F. The reading is obtained by placing the probe on the object to be measured. Within minutes the actual temperature of the piece will be shown on the dial. Dial readings can be checked on the spot and calibrated by turning an adjustment screw. Two flashlight batteries supply the current. Webber Gage Co., Cleveland is the maker.

rates are reported in many plants throughout the country, with some firms noting a doubling of productive volume, says the company. Principal labor-saving factor involved is the use of one plymetal shim instead of the three formerly required to braze carbide-cutting tools.

Mill Regulators Discussed

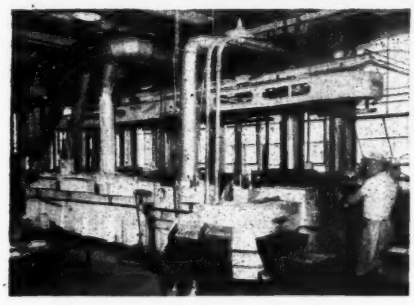
Application of the Magamp regulator to the various control problems found in steel mill processes is discussed in a 19-page booklet available from Westinghouse Electric Corp.

A magnetic device for amplifying voltage and current, the Magamp consists of an iron core with an alternating current output winding and one or more direct current control windings. Basically, it introduces variable impedance into an alternating current circuit. Dry-type rectifiers in series with the load convert the alternating current output to the direct current required for generator and motor fields.

Use of these regulators in nine different steel processing operations is covered. Included are tension control for temper-pass mills, control for tandem cold-reduction mills, speed regulation for rod and merchant mills and control for high-speed slitting and shearing lines. In each case, a flow chart and a schematic diagram are given.

Finally, a definitive discussion

PICTURE COURTESY OF MACK MOTOR TRUCK CORPORATION



Udylite Full Automatic Plating Machine is used at Ross Gear and Tool Company plant, Lafayette, Indiana.

UDYLITE EQUIPMENT ELECTROPLATES "REINS" FOR MODERN "MULES"

ROSS GEAR AND TOOL COMPANY USES UDYLITE EQUIPMENT TO PLATE STEERING GEAR PARTS FOR MACK TRUCKS

The old work mule has been put out to pasture, his place taken by powerful, rugged motor trucks which can go anyplace the mule could—and faster. Endurance is a premium with these huge vehicles—breakdowns cost money and precious time.

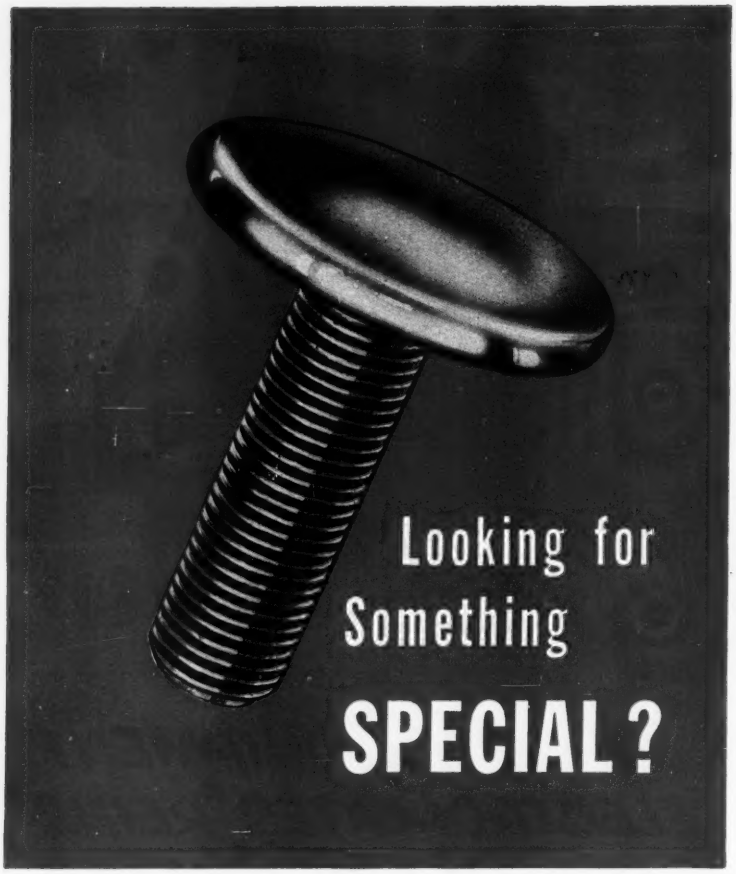
Moving parts in these modern "mules" must be protected against wear and tear with a surface as tough as the jobs these trucks must do. So Ross Gear and Tool Company, suppliers of steering gears for Mack Motor Truck Corporation, plates cams and bearing races with Udylite methods and machines. This assures a uniform finish at minimum cost in materials and manpower . . . and prevents surface scoring of these vital parts.

Ask your Udylite Technical Man about other examples where Udylite is helping build better, longer-lasting products. Or write direct to *The Udylite Corporation, Detroit 11, Michigan,* for complete details on how Udylite can help your firm in metal finishing operations.

PIONEER OF A BETTER WAY IN PLATING . . . .

TESTED SOLUTIONS • TAILORED EQUIPMENT
AUTOMATIC CONTROL IN METAL FINISHING

THE Udylite CORPORATION
DETROIT 11, MICHIGAN



● You can find the answer to your special fastener problems in a Circle Ⓑ bolt designed and made for your job. We'd like to show you how these special fasteners can add strength to your products while simplifying design and production problems. Follow the lead of well known producers who agree that "the best start to end fastener problems is to call in Buffalo Bolt."

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PRODUCERS OF CIRCLE Ⓑ PRODUCTS — BOLTS • NUTS • RIVETS AND SPECIAL FASTENERS

outlines the physical and electrical characteristics of Magamp regulators that make them particularly adaptable to heavy-duty service in steel mills. To obtain a copy, write to the company, Pittsburgh 30.

Big Planer Is Versatile

German machine performs most planing and milling operations from the original setup

DOUBLE-COLUMN planer that will handle workpieces as large as 177 x 110 x 394 inches is announced by Kurt Orban Co. Inc., New York. Built by Wagner in Germany, the machine performs transverse, vertical, bevel, and longitudinal planing, vertical and bevel slotting, longitudinal and transverse milling operations from a single setup.

Adaptability of the Wagner planer to this wide variety of machining operations without realignment of the workpiece greatly reduces the costs of setting up heavy, bulky pieces. The left-hand cross-rail head has an infinitely variable drive for feeding it along the cross rail, permitting transverse planing from the original setup with the longitudinal movement immobilized.

Save Set-up Time—Further savings in time are reported in the setting up; the table is divided longitudinally into two sections with independent travel. While one piece is being machined on the section of the table under the cross rail, a second piece can be set up on the stationary section of the table.

All motions are pushbutton controlled from a central point; no levers or handwheels are used. In addition to the central control, provision is made, by patented electromagnetic-mechanical devices, for portable pushbutton control of horizontal and vertical motions of feed, rapid traverse and precision approach.

More Advantages—These portable controls permit easy setting from the immediate vicinity of the work. Tool heads on cross rail and on side column have independent power drives. Illuminated windows with arrows, showing direction of feed, permit checking of movements from a distance.

Geared drive for the table has

Picture above of the wreck in which the tractor was demolished, while the tank Trailmobile of high-strength Otiscoloy held its cargo intact; (below) the same trailer, thirty days later, after being rebuilt.

J&L OTISCOLOY HIGH STRENGTH STEEL *plus* TRAILMOBILE CONSTRUCTION

Saved the day for this cargo of gasoline

When forced off a Missouri highway, this gasoline tank Trailmobile went over a high embankment, turned over twice and landed upside down—*but did not lose a gallon of its highly-inflammable cargo.* The tractor pulling the Trailmobile was completely demolished.

Trailmobile Inc., renowned for superior trailers, made a smart move when they selected high-strength J&L Otiscoloy Steel for Trailmobile construction. J&L Otiscoloy (with twice the yield strength of mild steel) will stand up better and longer under the severe impact and fatigue conditions of modern trailer operation.

In addition, J&L Otiscoloy's great strength permits Trailmobile to employ lighter weight sections in the construction—thereby cutting deadweight—and permitting Trailmobile trailers to haul larger payloads within the legal weight limits.

Finally, equipment builders such as Trailmobile have found that the ease of welding Otiscoloy lends itself to their production techniques and helps assure a strong, sound, finished product (as demonstrated in the photo above).

Why don't you check into the possibility of using J&L Otiscoloy to advantage in your operation? Send for a free copy of our booklet: "J&L Otiscoloy—The Transportation Steel." Or get in touch with the J&L representative nearest you.

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH 30, PA.

J&L STEEL

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One complete piece.....

29 Operations Every 41 Seconds.....

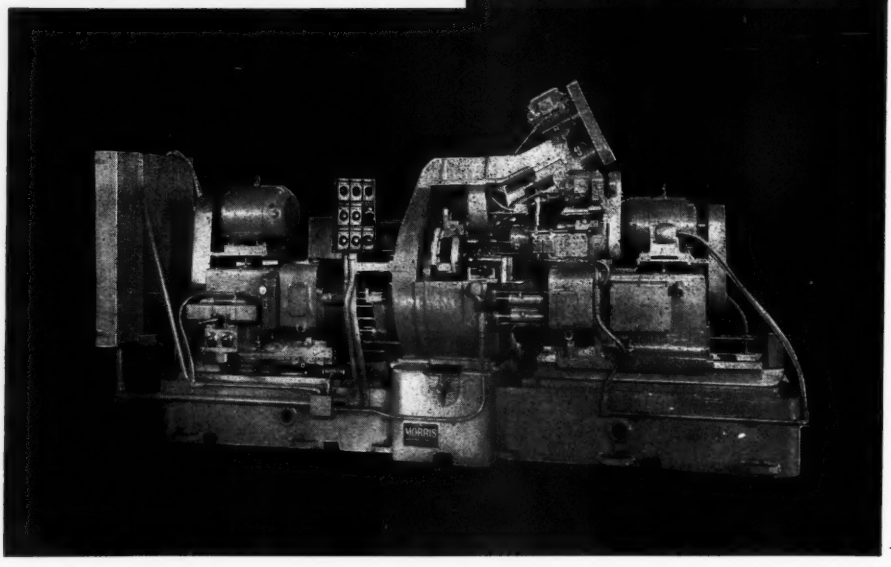
Producing crankshaft main bearing caps, this MORRIS Two Way, 6-Station Machine performs 29 operations with a single loading. One head carries 14 spindles, the other 12 spindles. Production rating is 87 pieces per hour at 100% efficiency. Operations performed include drilling, reaming, spot-facing and tapping.

This Morris application, for a leading automotive manufacturer, illustrates that "two heads are better than one" for higher production at lower cost. Put your heads together with MORRIS Engineers on any mass production, multiple drilling, reaming, tapping and similar operations. You'll save time, money, labor and floor space.

on this

Morris

MOR-SPEED MACHINE



"A Better Product at Less Cost . . . with PRECISION PLUS PRODUCTION"

Leaders of MOR-SPEED Line

Morris

THE MORRIS MACHINE TOOL COMPANY
941 HARRIET ST. CINCINNATI 3, OHIO

600 Is Tops

SPECULATING A BIT on the age of turbine aircraft, Admiral DeWitt C. Ramsey, president, Aircraft Industries Association of America Inc., has this to say:

"The coming series of turbine powered transports will have speeds in the 500 to 600 mph bracket and I believe they will stabilize for a period of 12 to 15 or even 20 years since the next speed increase would have to be in the supersonic range of 900 mph and up. This will require an entirely different type of power plant and airframe, as well as different structural materials."

been located in such a way as to permit heavy ribbing of the bed and columns, resulting in more rigidity at the points of highest stress.

Aluminum Boosts Truck Payload

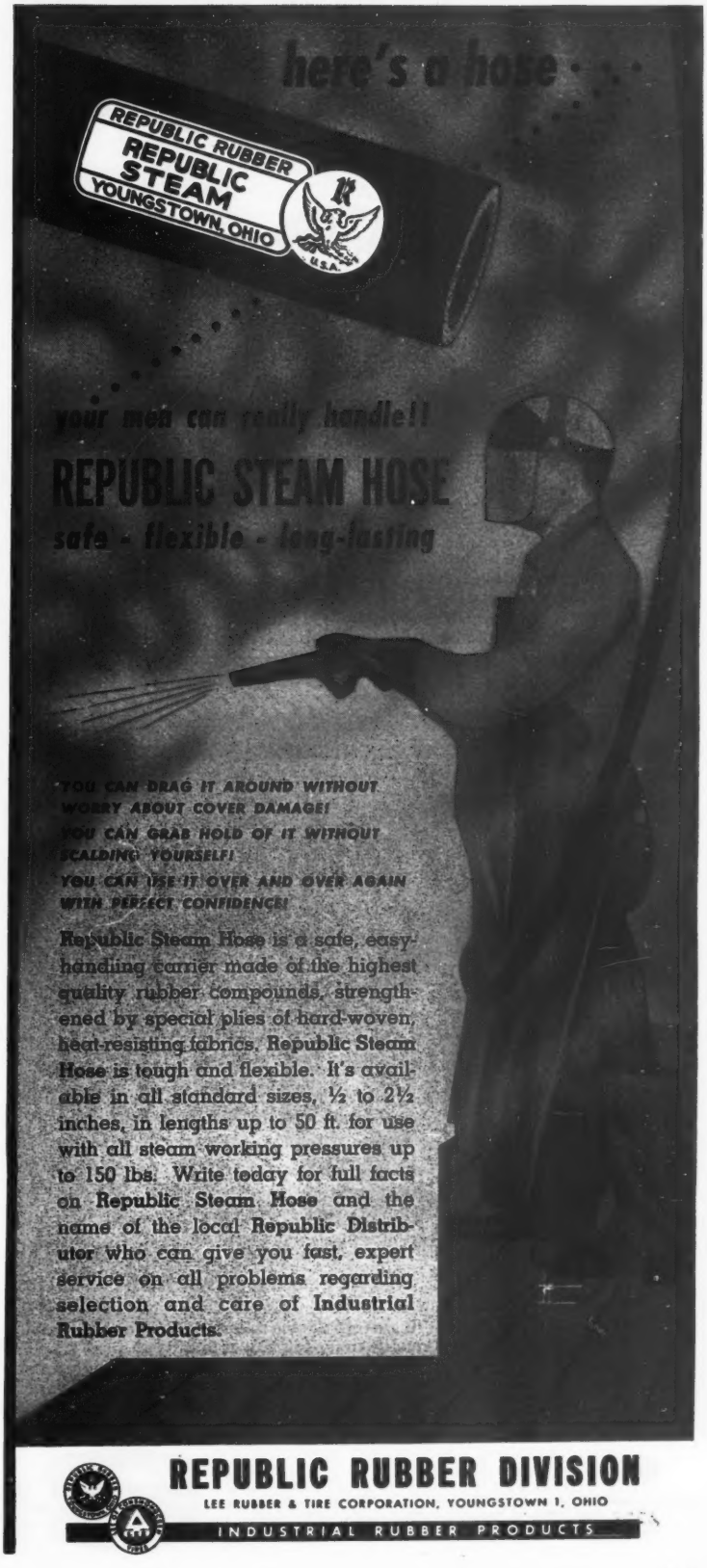
Use of light and structurally strong aluminum and magnesium alloys can save as much as 3000 pounds in truck and tractor weight. This means that a trucker can increase his payload that much. This was revealed by two Aluminum Co. of America representatives at the National Transportation and Maintenance meeting held recently in Pittsburgh.

Among specific examples cited, they pointed out that as much as 400 pounds might be saved by using forged aluminum disk wheels in place of steel wheels. An aluminum tandem rear axle also can cut truck weight by as much as 640 pounds, and frame rails may account for another 420 pounds saving.

Al-Fin Applications Expand

Wider application in America and Europe of the Al-Fin process, where aluminum and its alloys are joined to steel and cast iron or to nickel and titanium, is indicated by the recent announcement that two more American and two other firms abroad have been licensed to use the technique.

These include Thompson Products Inc., Cleveland and St. Catherine's Ontario; National Steel & Ship Building Corp., San Diego; Establishments J. Floquet in


here's a hose . . .
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your men can really handle!!
REPUBLIC STEAM HOSE
safe - flexible - long-lasting
YOU CAN DRAG IT AROUND WITHOUT WORRY ABOUT COVER DAMAGE!
YOU CAN GRAB HOLD OF IT WITHOUT SCALDING YOURSELF!
YOU CAN USE IT OVER AND OVER AGAIN WITH PERFECT CONFIDENCE!
Republic Steam Hose is a safe, easy-handling carrier made of the highest quality rubber compounds, strengthened by special plies of hard-woven, heat-resisting fabrics. Republic Steam Hose is tough and flexible. It's available in all standard sizes, ½ to 2½ inches, in lengths up to 50 ft. for use with all steam working pressures up to 150 lbs. Write today for full facts on Republic Steam Hose and the name of the local Republic Distributor who can give you fast, expert service on all problems regarding selection and care of Industrial Rubber Products.
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LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO
INDUSTRIAL RUBBER PRODUCTS

...make gloves last
3 to 5 times LONGER!

BEFORE

How Much Will This Reduce Your Yearly GLOVE Cost?

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LEATHER

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THIS IS WHAT "WASH-RITE" DOES...

Throw *all* your dirty, worn leather, rubber or cotton gloves in our steel drum. Ship to us. We correctly clean, sterilize, *COMPLETELY REPAIR*, sort, reshape, pair and ship them back to you as serviceable as new. Depending upon the gloves and their usage, gloves are being re-claimed by us 3 to 5 times. We specialize only in laboratory controlled re-claiming of rubber, leather and cotton gloves, aprons and clothing. *Write for literature.*

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...it costs you nothing to find out. SEND US A FREE TRIAL ORDER

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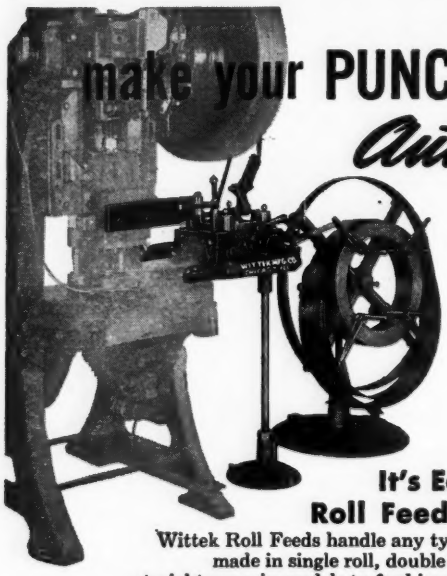


It's Easy...with WITTEK Roll Feeds and Reel Stands

Wittek Roll Feeds handle any type of coiled strip stock and are made in single roll, double roll, and compound types with straighteners, in models to feed in any of four directions. They are reliable and accurate with simple, quick adjustment of feed length. Standard sizes and models meet a wide variety of press size and capacity conditions.

*Write for full particulars

Wittek Reel Stands facilitate handling coiled stock.

WITTEK Manufacturing Co.

4328 W. 24th Place, Chicago 23, Illinois

Automatic ROLL FEEDS AND REEL STANDS

France; and W.&W. Schenk in Germany.

Most of the 18 firms now using the process, a wartime development of Fairchild Engine & Airplane Corp., are in the diesel, automotive, aircraft, housewares, electronic and electrical fields.

ASME Readies Power Show

Visitors will see exhibits in every phase of power distribution, conversion

INDUSTRY in all phases is included in the scope of the 20th National Exposition of Power and Mechanical Engineering, to be held in Grand Central Palace, New York, Dec. 1 to 6 under auspices of the American Society of Mechanical Engineers. The event coincides with the ASME annual meeting, and many of the exhibits at the show will exemplify subjects under discussion by the engineers.

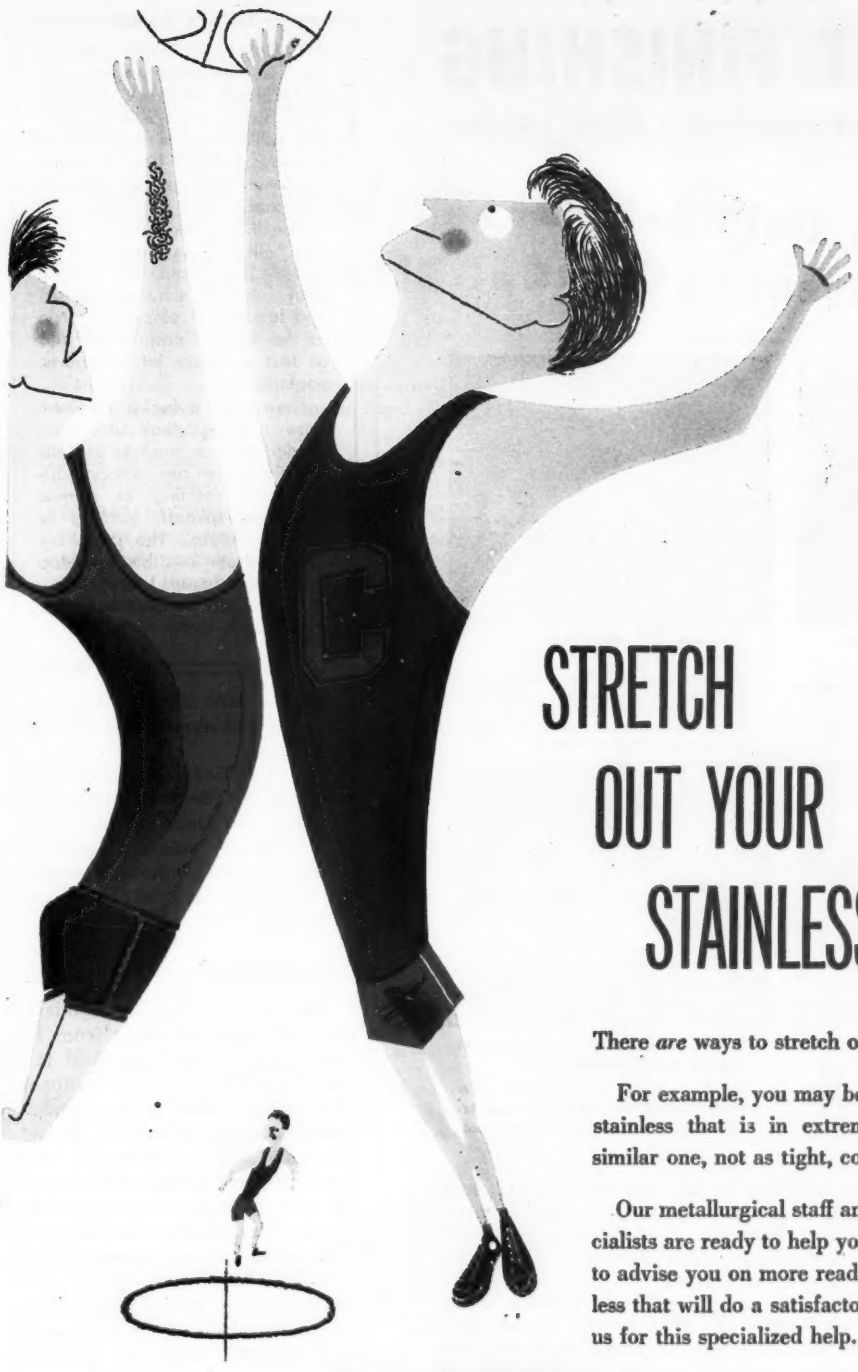
The exposition covers all branches of the power field from conversion of energy into fluid forms, such as heat, light, flowing water and steam, hot, cold and compressed air, to its application in moving mechanisms.

Conversion Processes — It includes the conversion processes themselves, such as combustion of fuels, generation of electricity and operation of heat exchangers, pumps and blowers. Distribution in transmission lines and pipelines will be demonstrated with many applications within the industrial plant. Examples will be seen of transmission, through wires, piping, shafting and belts, whether or not a plant generates its own power or buys it from a public utility.

Attendance is limited to persons having a professional, scientific or personal interest in the exhibits. Visitors are admitted by invitation and registration; but without registration fee. The general public is excluded.

Exhibitors numbering more than 300 will occupy three floors of the Palace.

What to See — Major exhibit classifications include: Power plant equipment; power transmission equipment; electrical, heating and ventilating and air conditioning equipment; materials handling equipment; safety, building con-



STRETCH OUT YOUR STAINLESS, TOO

There *are* ways to stretch out your supply of stainless.

For example, you may be using a grade or finish of stainless that is in extreme demand when another similar one, not as tight, could do the job adequately.

Our metallurgical staff and stainless fabricating specialists are ready to help you look into this matter and to advise you on more readily-available types of stainless that will do a satisfactory job. Feel free to call on us for this specialized help.

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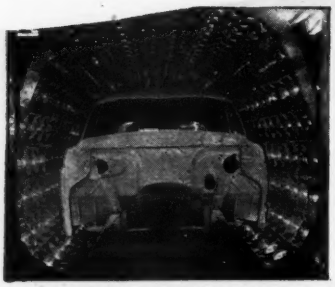
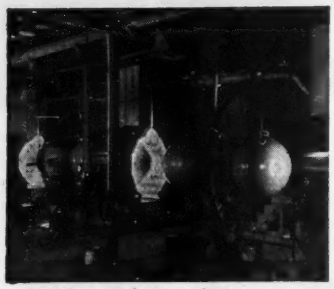
FOSTORIA INFRA-RED
Golden Wall Evenray Ovens



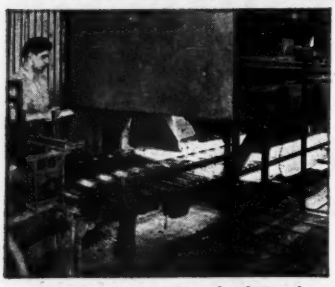
Paint Baking at Kaiser-Frazer

In this oven for body finish baking, controls vary heat for prime coat at 350°F for 12 minutes to finish lacquer coat at 175°F for 12 to 15 minutes. A smaller oven is used for smaller parts.



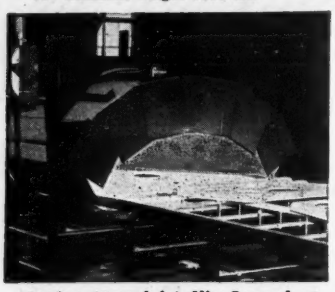
Finishing Sub Net Floats at Eaton Metal

Inside and outside zinc chromate and Navy gray finish coats are each baked in 12 minutes at 200°-250°F in these three small Fostoria ovens. Floats are 58" diameter, weight 1000 lbs.



Coat Drying at Standard Steel Spring

Protective coating sprayed on steel sheets before forming auto bumpers is dried in 1 minute eliminating bottleneck of former hot air drying. Production quadrupled.



Drying (Porcelain) Slip Enamel at Athens Stove Works

Dried in less than one minute in a Fostoria oven before high temperature firing. Photo shows one of two ovens used.

Cost reduction — a major problem in industry today — has been solved quickly by thousands of plants through the modern Fostoria Infra-red process for product finishing. Production results with Fostoria Infra-red Ovens are amazing. No other heating process approaches the speed, the ease of control, the low "per-piece" production cost of the high efficiency engineered Fostoria oven. Only Fostoria combines the highest efficiency energy source, lamp Infra-red, with the highest efficiency oven construction, Gold-lined Evenray oven walls. In productive use of energy, in uniformity of heat distribution, in flexibility of control and adaptability to any requirement, the Fostoria oven outperforms, outmodes, any other equipment. Write for the full facts, today!

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Please send me information on Infra-red Ovens for

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Built-In Bumps

TREADMILL, the large, economy size, is now under construction at Lockheed Aircraft Corp., Burbank, Calif. It's a 230-ton giant that will serve as a make-believe runway studying how to make airplane landings and takeoffs smoother.

Specifically the "wobble stopper" will help in elimination of shimmy from aircraft landing gear. It will simulate takeoff and landing of planes as large as the Super Constellation and as fast as future jet transports, engineers say.

Here's how it works: Airplane nose landing gear units are loaded with as much as 30 tons of weight, then run on a cylindrical drum rotating at speeds simulating takeoff, landing or taxi operations. The periphery of the drum can be provided with built-in bumps for reproducing taxi characteristics on rough airstrips.

struction, plant maintenance equipment; and equipment for research and testing.

The classified list includes 350 items ranging from abrasives, acid resisting materials and accumulators, through boilers, condensers, drives, dryers and ducts to winches, woodworking machinery and wrenches.

Tube Bulletin Published

Steel tubing and cold finished rods and bars available from Pacific Tube Co. are described in a bulletin published by the company. The 6-page folder gives standard manufacturing tolerances on outside and inside diameter, wall thickness and commercial lengths for various sizes of tubing. It includes size ranges for standard production of cold drawn carbon steel and alloy steel tubing, electric resistance welded steel tubing, stainless welded and drawn tubing, cold finished bars and precision shafting.

Greatest size range is for type 4130 alloy steel tubing: O.D. 3/16 to 3¾ inches inclusive. A table lists average physical properties of various tubing analyses regularly produced.

Products of Superior Tube Co., for which Pacific Tube is a representative, are briefly described. Bul-

South Bend 7" Shaper

FAST · EFFICIENT · ECONOMICAL!

Watch your machining costs on small work go down when a South Bend 7" Shaper takes over.

FIRST, its speed — 42 to 195 strokes per minute reduces machining time.

SECOND, its 7" stroke will handle a good share of your small toolroom, maintenance and production jobs thus releasing your heavy shapers for larger work. This stops the waste of using excess machine capacity on small jobs.

THIRD, with its small initial cost, less power consumption and low upkeep expense, your equipment budget won't take a beating when you specify South Bend 7" Shapers. Find out how these fast, versatile shapers can save you money. Call your local South Bend distributor today or send the coupon for complete information.

SPECIFICATIONS

RAM

Stroke length . . . . . 0 to 7"
Strokes per min. (4) . . . 42 to 195
Cutting speeds . . . 3 to 114 feet per minute

TOOL HEAD

Vertical travel . . . . . 3"
Tool post slot . . . . . ⅜" x ⅜"
Head swivels . . . . . 360°
Clapper swivels . . . . . 35°

TABLE

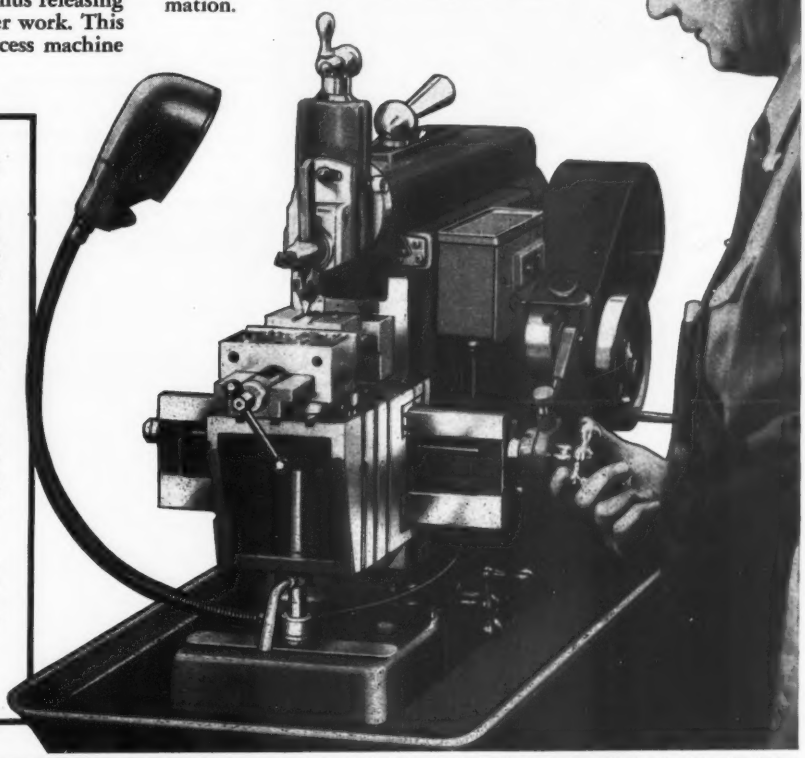
Vertical travel . . . . . 5"
Horizontal travel . . . . . 9½"
Power cross feeds (6) . . . . . .002" to .012" (reversible)
Size . . . . . 6 5/16" x 5" x 5⅛"
Distance from ram . . . ½" to 5½"

VISE

Maximum opening . . . . . 4"
Jaw width . . . . . 4"
Jaw depth . . . . . 1"
Height over table . . . . . 2 1/16"

MOTOR

⅓ or ½ h.p.



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WILL SANDVIK SPRING STEEL'S UNIFORM HARDNESS *improve YOUR product?*

The uniform hardness provided by Sandvik spring steels may make an important difference in your product. It can minimize die wear, improve blanking properties and assure better performance of the steel part itself.

Whenever your spring steel application calls for uniform hardness, high fatigue life, close tolerances or fine surface finish, think of Sandvik.

Sandvik cold-rolled strip steels are available:

- **Precision rolled in thicknesses from .001"**
- **In straight carbon and alloy grades**
- **In special analyses for specific applications**
- **Annealed, unannealed or hardened and tempered**
- **In a wide range of widths**
- **Unpolished or polished bright, yellow or blue**
- **With square, rolled or treated edges**

Phone, write or wire your nearest Sandvik office for further information or technical help.

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DESCRIBES 785 SPRING STEEL SIZES

Write, on your letterhead, for your copy, today.

SS-63

MADE OF SANDVIK STEEL

A high quality saw is one of the products that require uniform hardness. If is necessary for the setting of the teeth. Uniform hardness provides a keen, lasting cutting edge and high wear resistance.

Throughout the world, many manufacturers of quality saws rely on Sandvik steel for uniform hardness.

SOME SANDVIK SPECIALTY STRIP STEELS—Steel for Textile Machine Parts • Band Saw Steels; Metal Band, Wood Band and Butcher Band • Camera Shutter Steel • Clock and Watch Spring Steels • Compressor Valve Steel • Doctor Blade Steel • Feeler Gauge Steel Knife Steels • Razor Blade Steel • Reed Steels • Shock Absorber Steel • Sinker Steel Spring Steels • Trowel Steel • Vibrator Reed Steel, etc.

letin is available from the firm at 5780 Smithway St., Los Angeles 22.

Strain Gage on Scale Job

A large Chicago steel company, using modern techniques in proper load distribution for their heavy trucks, ran into a difficult installation problem right at their front door.

A mechanical lever-type scale was being constructed in the street when a huge conduit buried years ago by a power company, was found under the sidewalk. The cables were positioned directly on a level with the scale transverse lever, which was to extend to the recorder inside the building. To move the cable was impractical from the standpoint of time and money necessary. The mechanical scale could not be temporarily discarded because of the substantial investment put into it and the immediate need for an operating scale.

Lever Eliminated—Streeter-Amet Co. engineers were consulted to help find a solution. A basic component of an S-A electronic scale, the Baldwin SR-4 load cell, was installed—in conjunction with the electronic recorder—to eliminate use of the extended transverse lever, and thus overcome the problem of moving the power cables. The load cell functions under the principle that electrical resistance of the strain gage inside the cell changes as stress is applied.

The electronic recorder measures and prints the exact change in voltage which corresponds to the weight on the scale. In this instance, the load cell operates with a mechanical scale, and reacts to tension. Where a completely electronic installation is made, it usually requires four load cells and reacts to compression. A direct cable connection was then made from the load cell to the electronic recorder to register the weight distribution accurately.

Ventilated Bus Better

Ventilated square copper tube bus that provides increased current-carrying capacity for a given area of metal is supplied by Chase Brass & Copper Co. Inc., Waterbury, Conn.

Ventilating holes provide air cir-

This is the SIGN of your
BEST-BUY LINE

—and it marks your BEST source of Materials Handling Service—Service that encompasses Technical Counsel, Plant Surveys, Operator Training and Engineering as well as expert Maintenance and Repairs. Look with confidence to CLARK's nation wide organization of Authorized Sales and Service Dealers.

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W. A. Marschke & Sons, Inc.
INDIANA: INDIANAPOLIS 5
W. A. Marschke & Sons, Inc.
INDIANA: SOUTH BEND 14
Materials Handling Equipment Corp.
IOWA: DAVENPORT
Big River Equipment Company, Inc.
IOWA: DES MOINES
Big River Equipment Company, Inc.
KENTUCKY: LOUISVILLE 7
W. A. Marschke & Sons, Inc.
LOUISIANA: NEW ORLEANS
Industrial Truck & Caster Co., Inc.
MAINE: PORTLAND
Brodie Industrial Trucks, Inc.
MANITOBA: WINNIPEG
J. H. Ryder Machinery Co., Ltd.
MARYLAND: BALTIMORE 6
Railway Spring & Equipment Co.
MASSACHUSETTS: BOSTON (Malden 48)
Brodie Industrial Trucks, Inc.
MICHIGAN: DETROIT 2
Material Handling Sales Corp.
MICHIGAN: GRAND RAPIDS
Material Handling Sales Corp.
MINNESOTA: MINNEAPOLIS 7
Material Handling Engineers
MISSOURI: KANSAS CITY 8
Lift Truck Sales & Service, Inc.
MISSOURI: ST. LOUIS 8
Materials Handling Equipment Corp.
NEW JERSEY: UNION
Hull Equipment Co.
NEW YORK: ALBANY
Rushmore, Weber & Case, Inc.
NEW YORK: BUFFALO 2
Brodie Industrial Trucks, Inc.
NEW YORK: NEW YORK 14
Bond Industrial Equip. Sales Co., Inc.
NEW YORK: SYRACUSE 2
Brodie Industrial Trucks, Inc.
NORTH CAROLINA: GREENSBORO
Industrial Truck Sales & Service Co.
NORTH DAKOTA: FARGO
Sweeney Brothers Tractor Co.
OHIO: CINCINNATI 15
Robert C. Young & Co.
OHIO: CLEVELAND 11
Material Handling Equipment Corp.
OHIO: COLUMBUS
Edward J. Sherry Co.
OHIO: TOLEDO 4
Kern Truck Sales, Inc.
OKLAHOMA: TULSA 6
Arst Equipment Company
ONTARIO: FT. WILLIAM
J. H. Ryder Machinery Co., Ltd.
ONTARIO: TORONTO 5
J. H. Ryder Machinery Co., Ltd.
ONTARIO: WINDSOR
J. H. Ryder Machinery Co., Ltd.
OREGON: EUGENE
Preston Faller
OREGON: PORTLAND 5
Preston Faller
PENNSYLVANIA: HARRISBURG
Furnival Machinery Co.
PENNSYLVANIA: PHILADELPHIA
Furnival Machinery Co.
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Material Handling, Inc.
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J. H. Ryder Machinery Co., Reg.
SOUTH CAROLINA: COLUMBIA
Lukas Equipment Co.
SOUTH DAKOTA: SIOUX FALLS
Stan Houston Equipment
TENNESSEE: KNOXVILLE
Dempster Bros., Inc. (I.T.D.)
TENNESSEE: MEMPHIS
Fred J. Vandemark Co.
TERRITORY OF HAWAII: HONOLULU
Pressed Steel Car Co., Inc.
TEXAS: DALLAS
T. G. Frazee
TEXAS: HOUSTON 25
T. G. Frazee
UTAH: SALT LAKE CITY
Albert J. Isaacsen Company, Inc.
VIRGINIA: NORFOLK
Wilson Industrial Equipment, Inc.
WASHINGTON: SEATTLE
Preston Faller
WASHINGTON: SPOKANE
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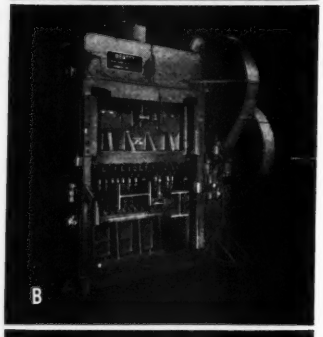
WISCONSIN: GREEN BAY
Wisconsin Industrial Truck Co., Inc.
WISCONSIN: MILWAUKEE 10
Wisconsin Industrial Truck Co., Inc.

In the Yellow Pages of your phone book, you will find your nearby CLARK dealer listed under "Trucks—Industrial"

INDUSTRIAL TRUCK DIVISION
CLARK EQUIPMENT COMPANY
BATTLE CREEK, MICHIGAN

A



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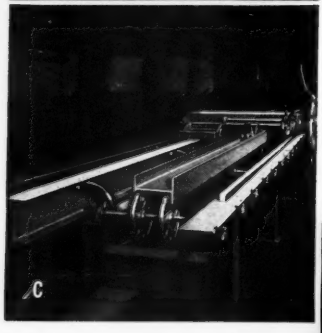
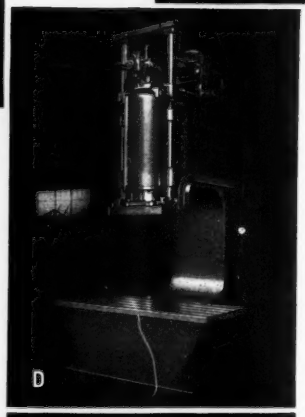


C

MATCH-MAKERS

BEATTY specializes in making machines to match various heavy metal working conditions and problems. If one of the machines shown can't be modified to suit your needs, we'll design and build one that does. Broad experience in varied metal working fields has taught us that there is always a better way to solve production problems. Let one of our engineers show you how the BEATTY way is a BETTER way to increased production and economy.

BEATTY
MACHINE & MFG. CO.
HAMMOND • INDIANA



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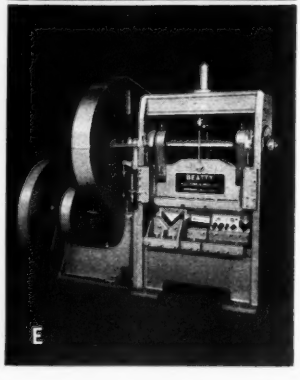


E

A. BEATTY Horizontal Hydraulic Bulldozer for heavy forming, flanging and bending.

B. BEATTY Guillotine Beam Punch. Punches webs and flanges in "I" beams from 6 to 30 inches.

C. BEATTY Spacing Table handles web and flange punching without roll adjustment.

D. BEATTY Gap Type Press for forming, bending, flanging, pressing. Capacity 250 tons.

E. BEATTY Guillotine Bar Shear for angles, bars, rounds, squares without changing tools.

culation for dissipation of heat from internal tube surfaces and increase alternating current-carrying capacity approximately 20 per cent. This increase is due to dissipation of heat by air circulation, and rounded corners of the square tube that tend to reduce local heating from concentration of current in those corner areas.

Less Sags—Square copper tube provides the advantage of mechanical strength in all directions so longer spans, without unduly large sags, are obtained between supports. Mechanical strength is also desirable during heavy fault current, ice and heavy wind conditions.

One-piece construction of square copper tube also facilitates assembly of conductors, fittings and supports with consequent saving in time and cost.

Electrolytic Alkaline Descaler

Complete and effective scale removal of metals by the use of periodic reverse current is the accomplishment of a process for electrolytically derusting metal in alkaline solutions according to Enthone Inc., New Haven, Conn.

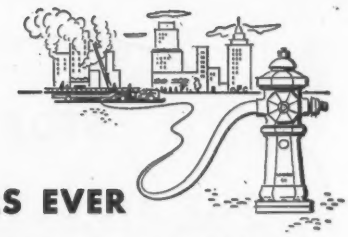
Application of periodic reverse current, in which the work becomes the anode, from 5 to 30 seconds and then the cathode for a like period of time, has accomplished clean removal of black heat treat, quenching and other scales on steel and alloy steels more effectively than acid pickling.

Another application of the descaling process is smut removal of metal. Many high carbon steels are blackened by the use of acids, due to liberation of carbon smut. Periodic current reversal treatment permits scale and carbon smut removal.

Plexiglass Skylight Developed

Marking a trend in skylights for factories is the Domelite, a one piece plexiglass unit developed by E. Van Noorden Co., Boston. Domelites come in square or rectangular sizes ranging from 20 x 20 to 64 x 96 inches.

Plexiglass is either clear colorless or white translucent to meet various requirements for privacy, light and climate.



NO LUDLOW FIRE HYDRANT HAS EVER FAILED IN LINE OF DUTY!

Everdur stems resist stresses, strains and corrosive attack

Everdur* has helped to endow many types of products with the same time-tested reliability of performance of which the makers of these Ludlow Fire Hydrants are so justifiably proud.

Everdur,* The American Brass Company's group of Copper-Silicon Alloys, has long demonstrated its ability to resist corrosion while at the same time providing strength, toughness and unusual fatigue resistance plus easy workability and weldability. It provides many of the properties required for tin-bronze application.

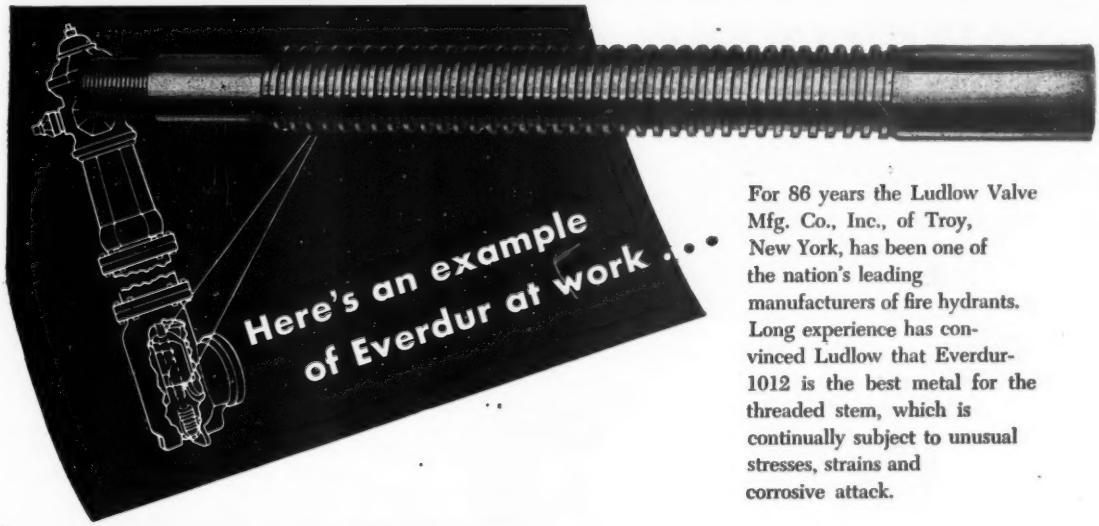
Tell us what you make – and how it is to be used. We'll do our best to help you get the right metal. It may be Everdur or one of a dozen different ANACONDA Alloys. Address The American Brass Company, General Offices, Waterbury 20, Connecticut.

*Reg. U. S. Pat. Off.

EVERDUR is produced in nearly all commercial forms including casting ingots for remelting. It offers:

High Strength and Toughness
Unusual Fatigue Resistance
Excellent Corrosion Resistance
Weldability plus *Workability*
Machinability

Publication E-5 gives Applications, Physical Properties and Constants of Everdur. Publication E-1, on Everdur Casting Ingots, describes Foundry Practice and Procedure. Write for either or both.



The Everdur-1012 (free-cutting alloy) stem, used in the Ludlow Hydrant, is 15" long with a 1-5/16" –4 square–cut thread.

For 86 years the Ludlow Valve Mfg. Co., Inc., of Troy, New York, has been one of the nation's leading manufacturers of fire hydrants. Long experience has convinced Ludlow that Everdur-1012 is the best metal for the threaded stem, which is continually subject to unusual stresses, strains and corrosive attack.

EVERDUR

ANACONDA®

COPPER-SILICON ALLOYS

STRONG • WELDABLE • WORKABLE • CORROSION-RESISTANT

STOP

THE BIGGEST THIEF

IN AMERICA

OAKITE GIVES YOU THREE WAYS TO FIGHT RUST

Day and night—wherever your steel is stored or handled—RUST, the biggest thief in America is robbing you of production, robbing you of profit.

Oakite can help you defeat rust three ways:

☆ **1 By removing rust from raw steel**—often eliminating pickling by removing rust and oil in one operation.

☆ **2 By preventing rust during processing**—protecting your steel all the way from stamping to shipping.

☆ **3 By preventing under-coat rusting of painted products**—combining cleaning, paint-conditioning and rust-prevention in one operation.

FREE For the Oakite Anti-Rust Kit that tells about these three big ways—plus several other methods—to stop RUST in your plant, write to Oakite Products, Inc., 34E Rector St., New York 6, N. Y.

Technical Service Representatives in Principal Cities of U. S. & Canada

OAKITE SPECIALIZED INDUSTRIAL CLEANING MATERIALS • METHODS • SERVICE

TRADE MARK REG. U.S. PAT. OFF.

CALENDAR
OF MEETINGS

November 18-20, Conference, High Energy Nuclear Physics: National Science Foundation and University of Rochester, sponsors, Rochester, N. Y.

November 19, American Standards Association: Annual meeting, Waldorf-Astoria Hotel, New York. Association address: 70 E. 45th St., New York 17. Secretary: G. F. Hussey Jr.

November 19-20, Industrial Hygiene Foundation: Annual meeting and conference, Foundation address: Mellon Institute, Pittsburgh 13. Managing director: C. Richard Walmer, M. D.

November 20-21, American Society for Personnel Administration: Fall meeting & exhibit, Hotel Schroeder, Milwaukee. Society address: 2917 E. 79th St., Cleveland. Secretary: Mary E. Hopkins.

November 20-21, American Society for Quality Control: Midwest quality control conference, Hotel Claypool, Indianapolis. Conference information: Dale A. Cue, Indianapolis Section, ASQC, Box 5664, Indianapolis.

November 20-22, Galvanizers Committee, American Zinc Institute: Fall meeting, Hotel Bismarck, Chicago. Institute address: 60 E. 42nd St., New York 17. Secretary-treasurer: E. V. Gent.

November 21, Association of American Railroads: Annual meeting, Waldorf-Astoria Hotel, New York. Association address: Transportation Bldg., Washington 6. Secretary-Treasurer: G. M. Campbell.

November 30-December 5, American Society of Mechanical Engineers: Annual meeting, Statler and McAlpin Hotels, New York. Society address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

December 3, Steel Kitchen Cabinet Association: Annual meeting, Hotel Cleveland, Cleveland. Association address: Engineers Bldg., Cleveland 14. Executive Secretary: Arthur J. Tuscany.

December 3-5, American Leather Belting Association: Fall meeting, Hotel Commodore, New York. Association address: 320 Broadway, New York 7. Secretary: E. R. Rath.

December 3-5, Society for Experimental Stress Analysis: Annual meeting, Hotel McAlpin, New York. Society address: Box 168, Cambridge, Mass. Secretary: W. M. Murray.

December 4-6, Electric Furnace Steel Committee, American Institute of Mining & Metallurgical Engineers: Annual conference, Hotel William Penn, Pittsburgh. Institute address: 29 W. 39th St., New York 18. Secretary: Edward H. Robie.

December 18, Material Handling Institute: Annual meeting, Hotel Statler, New York. Institute address: 731-732 DuPont Circle Bldg., Washington 6. Managing director: R. Kennedy Hanson.

Manifold Finish Won't Rust

No longer must an automobile engine lose its new appearance through rusting and discoloration of the manifold. A heat-resistant silicone-base finish developed by Midland Industrial Finishes Co., is said to maintain its appearance, color and film integrity under the most severe heating.

Called Sicon, the finish has been applied to a manifold by Lincoln automotive engineers and subjected to 1000°F for 24 hours, a test substantially more severe than actual operating conditions. After a road test of 10,000 miles, it was found that the Sicon finish had not been affected.

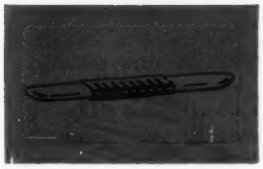
What's cookin' in production economy?

The application of Nickeloid Chrome Steel for the oven door window is a successful application.

Broiler grid . . . durable, easy-to-keep-clean, heat-resisting . . . formed from pre-plated Nickeloid Chrome Steel or Chrome Aluminum.

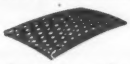
Range lamp, modern and attractive. Uses a pre-plated metal by Nickeloid. No plating or polishing after fabrication.

This splash back — modern yet functional — is formed from Chrome Steel — will not peel or blister.



Stove door handles . . . another perfect application of Nickeloid Metals as used on many well-known makes of ranges.

product beauty is more than skin deep

The stove industry is just one of many that has made wide and successful use of Nickeloid Metals. Manufacturers of ranges and appliances have found that appearance is improved, manufacturing costs, reduced, with this **finished** raw material Chrome Steel, as shown in the illustrations of stove parts on this page, serves a functional purpose as well as providing attractive, durable trim.  Are YOU taking advantage of this modern method in the design and manufacture of **your** product? It will pay you to investigate.

AMERICAN NICKELOID COMPANY
Peru 1, Illinois

pre-plated metals for industry

NICKELOID METALS (Pre-Plated)
NICKEL · CHROMIUM · BRASS · COPPER
Electro-plated to all common base metals
ALSO LACQUERED COLORS
SHEETS AND COILS

OLDEST AND LARGEST PRODUCERS OF PRE-PLATED METALS

Iron and Steel *need protection too!*

If it's made of iron or steel,
and exposed to the elements,
remember to have it
Hot-Dip Galvanized—*sealed in zinc!*

HANLON-GREGORY
Galvanizing Company

Pittsburgh . . . Pennsylvania

The World's Largest Job Galvanizing Plant

A. J. DIEBOLD, President

in the heart of the STEEL INDUSTRY

galvanizing . . . . pickling . . . . painting . . . . oiling

NEW PRODUCTS and equipment

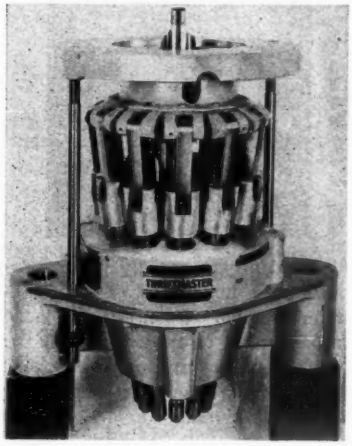
Reply cards on page 167 will bring you more information on any new products and equipment in this issue

Fixed Center Drillhead

. . . drills twelve ¼-inch holes

Twelve-spindle fixed center drillhead is used for drilling twelve ¼-inch holes set at 10-degree angles. Holes are located on the flat surface near the periphery of a steel part.

In one application, a trap in a 3½-inch anti-tank rocket is drilled to 0.001-inch in a single pass under power feed of 0.004-inch per revolution at about 1000-rpm. Drillhead has 1 to 3 gear ratio. Thriftmaster Products Corp., Dept. ST, 1064 N. Plum St., Lancaster, Pa.



USE REPLY CARD—CIRCLE No. 1

Dustless Masonry Cutter

. . . sweeps away fine particles

Safer, dust-free sawing of refractory brick and masonry materials is possible with the BrikSaw cutter. Cutting operation can be carried on in immediate vicinity of bricklayers and furnace builders, or next to machinery.

Dustless cutting is made possible by a high-capacity centrifugal water pump. All dust and material particles are swept away in a constant water spray, leaving work area dust-free. Additional safety measure is Snap-Lock hinged blade that serves as a protective shield in case of broken blades and wards off water spray. Eveready Brik-Saw Co., Dept. ST, 1509 S. Michigan Blvd., Chicago 5, Ill.

USE REPLY CARD—CIRCLE No. 2

Pneumatic Drill Unit

. . . delivers 21 ft oz of torque

DeKay model drill unit, built with self-aligned replaceable motor carriage, uses 12 cu ft of air per minute under full load and delivers 21 foot ounces of torque. Improved design incorporates speed regulator throttle, directional exhaust deflector, built-in silencer and safety chuck guard.

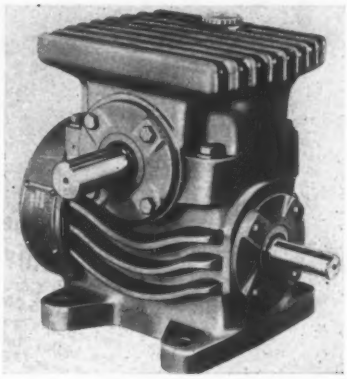
Units are available with pistol grip, straight and 90-degree angle extension drill types of ¼-inch capacity. Speeds reach from 2200 to 15,000 rpm, and an 18,000 rpm precision grinder is available with collet chuck. Burklyn Co., Dept. ST, 3429 Glendale Blvd., Los Angeles 39, Calif.

USE REPLY CARD—CIRCLE No. 3

Worm-Gear Speed Reducer

. . . previous horsepower doubled

Worm-gear speed reducer's housing design, aided by a fan mounted on the input shaft, is built to gain greater thermal capacity. Higher capacity makes possible transmission of about twice the horsepower possible in older designs having equal size.



Models are offered in nine different ratios, from 5 to 1 up to 60 to 1. Smallest of the series has a center of worm shaft to center of gear shaft distance measuring 3 inches. Other sizes will be offered in even inches up to 7. Eberhardt-Denver Co., Dept. ST, 1408 W. Colfax Ave., Denver 4, Colo.

USE REPLY CARD—CIRCLE No. 4

Hysteresis Brake

. . . holds constant tension

The improved hysteresis brake holds constant tension on yarns, wire, etc. by magnetic drag instead

of friction. It consists of Alnico magnets designed and mounted so that a magnetic drag offers a restraining force on a pulley. This force is essentially constant at all speeds. Brake reverses the direction of rotation a few degrees after stopping, thereby holding stalled tension. General Electric Co., Dept. ST, Schenectady 5, N. Y.

USE REPLY CARD—CIRCLE No. 5

Multi-Purpose Die Adapter

. . . employs quick-change inserts

Die adaptor, called the Nu-Twist, makes possible use of the same die for several different resistance welding operations. A quick change of electrode inserts is sufficient to adapt the die to such operations as spot and projection welding, electrical upsetting and electro-brazing.

Adaptor holder and electrode inserts have no threads or tapers, thus electrode is released or secured with a simple turn of the locking nut. P. R. Mallory & Co. Inc., Dept. ST, 3029 E. Washington St., Indianapolis 6, Ind.

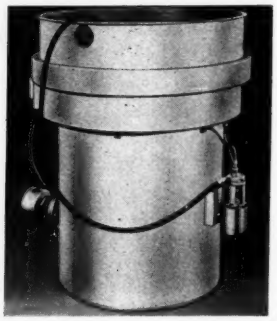
USE REPLY CARD—CIRCLE No. 6

Semi-Portable Degreaser

. . . capacity: 600 pounds per hour

Compact model VS Jr degreaser cleans small and medium-sized parts in plants where production up to 600 pounds of steel per hour must be accommodated. Two standard, manually operated models are available—one electrically heated, the other operated by steam. Both can be relocated easily.

Parts are suspended in pure solvent vapor which dissolves soils of



dirt and grease rapidly. Hot solvent spray flushes away loose, remaining soils. Work can be placed in baskets or on racks or hooks for quick handling and can be carried to and from the degreaser either by hand or small hoist. Detrex Corp., Dept. ST, Detroit 32, Mich.

USE REPLY CARD—CIRCLE No. 7

Oil Atomizing Inserts

. . . provide standby oil firing

Insert units provide simple, economical means for standby oil firing to avoid furnace shutdowns when supply of gas is curtailed or unavailable. Units are installed with threaded mounting bushing into nozzle or tees of low or high-pressure gas burners.

Nozzle mixing method assures complete atomization and clean combustion of any free flowing fuel oil grade. To gain easy and accurate control, inserts are equipped with the Hauck self-cleaning me-

WILL YOUR LADLE LININGS HANDLE UP TO
100,000 TONS
BEFORE REPLACEMENT?
There is no guesswork when you specify BUCKEYE!
Buckeye Silica Firestone ladle linings have averaged about 55,000 tons of iron in 80-ton ladles and approximately 75,000 tons of iron in 125-ton ladles. In many instances, linings have carried over 100,000 tons of metal before being replaced!
The same assurance of super-efficiency can be yours when you decide to reline your ladles with Buckeye Silica Firestone. The cost of sculling out the old lining and completely replacing it with Buckeye is less than one cent per ton of metal carried, labor and material included! Decide today to take advantage of Buckeye's superior quality and attractive cost. Write us and a refractory engineer will call at once!
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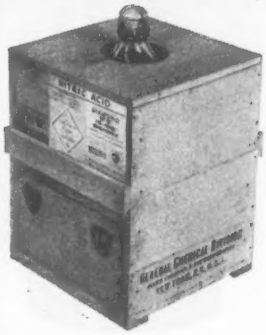
1740 E. Twelfth St. Cleveland 14, Ohio
BUCKEYE
"FOR THAT EXTRA SERVICE"
SILICA FIRESTONE

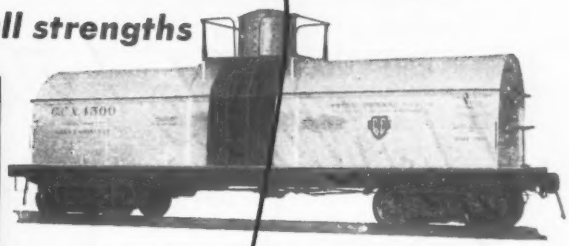
WHAT FORM of NITRIC ACID Do You Use?

Anhydrous
Commercial
Fuming
Reagent



GENERAL CHEMICAL Has Them All!

...in all grades...all strengths



BASIC CHEMICALS
GC
FOR AMERICAN INDUSTRY

NEED NITRIC ACID FOR pickling stainless steel . . . or for surface treating of magnesium and aluminum? Perhaps you use it for etching and engraving, for making explosives, or for aircraft and rocket propulsion! Whatever form of Nitric Acid you use—General Chemical can supply your needs.

AS A PRIMARY PRODUCER of Nitric Acid for 53 years, General has delved deeply into the product's properties and potentialities. This knowledge led to General's development of the first anhydrous Nitric Acid ever produced commercially, as well as to production of special fuming forms for urgent defense programs.

Today, General Chemical is industry's sole source, producing all forms of this essential acid . . . in any desired grade or strength . . . for any need.

For your Nitric requirements, consult General Chemical. Further information on any of the grades and strengths listed here may be obtained from the nearest General Chemical office serving you.

Grades of
General Chemical Nitric Acid
include:

ANHYDROUS
Total acidity 99.8% min.

COMMERCIAL
Standard—36°, 38°, 40°, and 42° Baume
Diamond (highest commercial quality)—36°, 38°, 40°, and 42° Baume
95% (48.5° Bé) Diamond and Standard
Photo Engravers—36°, 38°, 40°, and 42° Baume

FUMING
Fuming Red-Technical and Reagent, Sp. Gr. 1.59-1.60
Fuming White-Technical and Reagent, A.C.S. Sp. Gr. 1.49-1.50

REAGENT
Reagent, A.C.S., Sp. Gr. 1.42

GENERAL CHEMICAL DIVISION
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SHENANGO Centrifugal CASTINGS ... KEY TO SAVINGS

You'll do better

WITH SHENANGO

CENTRIFUGALLY CAST PARTS

HERE'S WHY . . . Shenango centrifugally cast parts offer many inherent advantages that can help you avoid trouble and save time and money.

For example, due to the centrifugal casting action, you get a more uniform, pressure-dense metal, free from sand inclusions, blow holes and other often-hidden defects. You get higher strength, greater wear resistance, better elongation—longer lasting parts, better able to withstand severe service of *any* kind.

So if your plans call for symmetrical shapes, anywhere from tiny bushings to huge rolls, ferrous or non-ferrous, rough or finished, check with Shenango. Company after company finds it a good way to do a better job at lower cost.

SHENANGO-PENN MOLD COMPANY
Centrifugal Castings Division
Dover, Ohio
Executive Offices: Pittsburgh, Pa.

SHENANGO

ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE® METAL

NEW PRODUCTS and equipment

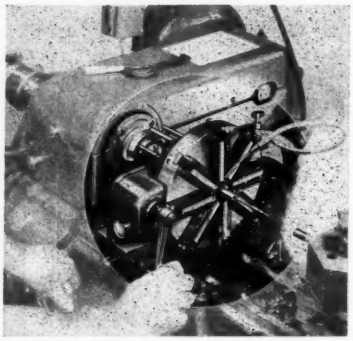
tering oil valve. Valve indicator dial eliminates guesswork in repeating previous settings. Hauck Mfg. Co., Dept, ST, 124-136 Tenth St., Brooklyn, N. Y.

USE REPLY CARD—CIRCLE No. 8

Lathe Duplicator Accessory

. . .multiplies parts production

Accessory introduced for multiplying small lathe production of duplicate parts fits any engine lathe between 9 and 12 inches swing and can be installed without lathe alterations. Roto Head accessory employs the principle of Swiss-type automatic machines. It



has eight different single point tools mounted in slidable, spring-loaded tool holders.

Tool infeed is actuated individually by rotating a hand crank. By varying setups of the different bits, up to 16 different diameters can be produced on one job. General Roto Co., Dept. ST, 8914 Melrose Ave., Los Angeles 46, Calif.

USE REPLY CARD—CIRCLE No. 9

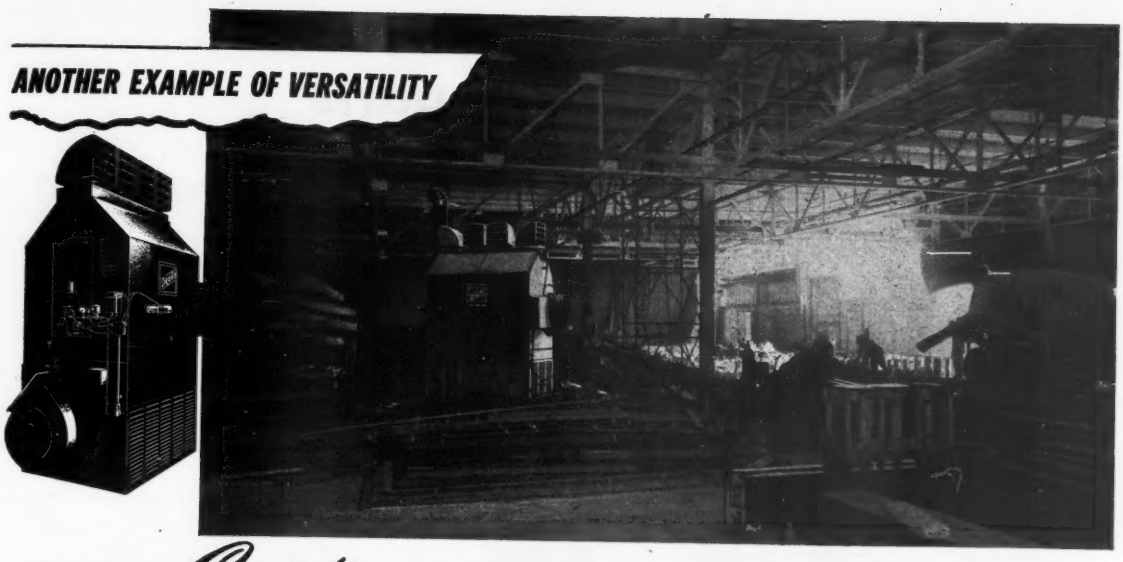
Stand-Up Fork Truck

. . .meets narrow aisle problem

This electric stand-up fork truck, able to operate within its own length, is designed for warehousing jobs where close quarters and narrow aisles demand high maneuverability. Capacity is 2000 pounds at 24 inches; 2500 pounds at 15 inches; 1650 pounds at 30 inches. Driver comfort where continual mount and dismount is necessary, convenience of controls and excellent visibility are added features of the truck.

Heavy-duty hydraulic service

ANOTHER EXAMPLE OF VERSATILITY



DRAVO *Counterflo* HEATERS DO DOUBLE-DUTY FOR FORD MOTOR COMPANY CONSTRUCTION PROJECT

Construction of the new Ford Motor Company Engine Plant in Cleveland called for temporary heating during the winter months of 1950-51 so the building schedule could be maintained. Six Dravo Heaters were installed to serve a two-fold purpose:

COMFORT HEATING—The Dravo Heaters maintained a 40° F. temperature inside a 405,000 sq. ft. area when outside temperatures were 0° F. . . . operated 24 hours per day... distributed and recirculated heat throughout the working area with a maximum air throw... eliminated the need for salamanders or bonfires to keep workers warm, thereby reducing fire hazards.

PROCESS CURING OF CONCRETE—The Dravo Heaters kept the ground from freezing so concrete could be poured during sub-freezing weather. Heaters helped cure concrete quickly . . . were easily moved to any location to fit job requirements.

DRAVO HEATERS OFFER YOU . . .

LOW INITIAL COST—users report 30% to 60% savings.
EASY INSTALLATION—fuel, electrical and exhaust connections are only requirements . . . no duct work.
LOW FUEL CONSUMPTION—burns gas or oil . . . readily converted . . . direct-fired.
QUICK HEAT—fast warm up . . . heat starts when heater is turned on.
LISTED-APPROVED—listed by Underwriters' Laboratories, Incorporated . . . approved by American Gas Association . . . acceptance by Factory Mutual Engineering Division of Dravo standardized safety control circuit.
AUTOMATIC CONTROLS—on-off or modulating controls.
MOBILITY—can easily be moved to any location to suit requirements.
FLEXIBILITY—can be mounted horizontally or vertically on ceiling, walls or floor.
LONG SERVICE LIFE—stainless steel combustion chamber eliminates refractory lining.

MAIL THIS COUPON FOR MORE INFORMATION . . .

Heating Department, Dravo Corporation
Dravo Building, Fifth and Liberty Avenues
Pittsburgh 22, Penna.

I would like more information about Dravo *Counterflo* Heaters. Please send me Bulletin No. VW-52 -3

Name_____
Title_____
Company_____
Address_____
City_____ Zone_____ State_____

DRAVO

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put your parts in this profit picture with ROCKRITE TUBING

Compression sized to far closer tolerances than cold-drawn tubing, Rockrite Tubing cuts cost of parts . . . saves valuable machine time. Here's proof. • *One user halves honing time for hydraulic cylinders.* • *Another doubles output of ring-shaped parts with same machines.* • *Still another reduces machining chip losses by 64%. Also saves steel—gets more parts per pound.* • Want to know how you can put *your* parts in this profit picture with Rockrite Tubing? Send for Bulletin R2 which contains complete data.

Rockrite Tubing is made only by Tube Reducing Corporation, the originator of this process. You benefit by unequalled quality control methods.

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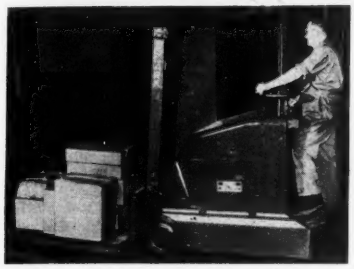
ROCKRITE saves more than any other tubing

- *Higher cutting speeds*
- *Tools last longer between grinds*
- *Work-surface finishes are better*
- *Machined parts have closer tolerances*
- *Stations on automatics are often released for additional operations*
- *Extra-long pieces available — less downtime for magazine stocking and fewer scrap ends*
- *Closer tolerances often eliminate necessity for machining on outside or inside*

TUBE REDUCING CORPORATION · WALLINGTON, NEW JERSEY

brakes on the drive wheels serve regular and parking-brake operations. Deadman or parking brakes



act when the driver dismounts or removes his foot from the brake pedal. Turning radius is 60 inches. Clark Equipment Co., Industrial Truck Division, Dept. ST, Battle Creek, Mich.

USE REPLY CARD—CIRCLE No. 10

Mobile Work Benches

. . . 13-inch height adjustment

This auxiliary work bench is adjustable in height, easily movable, completely rigid in use. Tender is designed to handle setup tools be-

side drill presses, lathes, grinders. Further shop applications are innumerable on jobs where large stationary work benches are unavailable.

Work surface height is adjustable through 9 positions, from 21½ to 34½ inches. Sliding drawer and steel tool tray are included to expand its usefulness. Work top has instantly adjustable side and back

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Unloads HOPPER CARS Faster . . . Cleaner

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Saves Time: Unloads 70-ton hopper cars "*broom clean*" in as little as 90 seconds . . . even when loaded with hard-packed material.

Saves Manpower: Everything under "finger-tip" control except opening the hopper doors. Two men —or even one—can handle entire operation.

Saves Money: Less car damage—no need for demurrage.

Here's Proof: Operators say . . . "It is in operation 24 hours a day unloading ⅜" x 0" coal and *saving us $70.00 a day* since first put into operation in 1946" . . . "It has *reduced our unloading time* from 100 man-hours to 18 man-hours per day" . . . "*Pays for itself* every 105 days by merely eliminating damage to railroad cars."

Two Types: The HD Car Shakeout for continuous, high-speed car unloading—the GS Car Shakeout for operators who unload 15 or less cars per day.

Get The Facts . . . for the HD Car Shakeout, write for Bulletin No. 128-A—for the GS Car Shakeout, write for Bulletin No. 130.

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STAMFORD, CONNECTICUT

OVER ONE HUNDRED YEARS OF CONTINUOUS SERVICE. ROUNDS, SQUARES, FLATS, HEXAGONS, OCTAGONS

ANNOUNCING . . .

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OIL HARDENING TOOL STEEL

WL introduces *"Whelco"*—a new tool steel of M grade—a new steel of maximum toughness, hardness and strength—a steel to assure maximum results at low cost! *"Whelco"* offers great penetration of hardness, great toughness at high hardness, wide hardening range, fine grain structure, and desirable non-deforming characteristics. *"Whelco"* has good forging properties and is readily machinable in the annealed condition. All **WL** warehouses stock *"Whelco"* M tool steel in a wide variety of flats and squares. Call your nearest **WL** man for a trial order—the results will speak for themselves!

WL steels are metallurgically constant. This guarantees uniformity of chemistry, grain size, hardenability—thus eliminating costly changes in heat treating specifications.

Write today for your FREE COPY of the Wheelock, Lovejoy Data Book, indicating your title and company identification. It contains complete technical information on grades, applications, physical properties, tests, heat treating, etc.

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131 Sidney St., Cambridge 39, Mass. and Cleveland • Chicago • Detroit Hillside, N. J. • Buffalo • Cincinnati

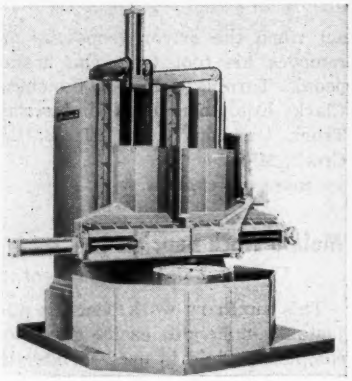
rails that can be depressed for handling larger pieces. Sturdi-Bilt Steel Products Inc., Dept. ST, 624 S. Michigan Ave., Chicago 5, Ill.

USE REPLY CARD—CIRCLE No. 11

Vertical Contouring Machine

. . . machines large round parts

Precision contouring machine, the vertical style 426-A, machines large round parts such as jet compressor wheels. It performs precision contouring, boring, turning,



facing, grooving and rabbeting. Tracer carried on the horizontal member of the right-hand compound slide controls both vertical and horizontal movements in contouring.

Individual variable-speed motors drive lead screws that operate both vertical and horizontal members of the contouring slide. Seven different automatic cycles are possible with the left-hand compound slide. Ex-Cell-O Corp., Dept. St., 1200 Oakman Blvd., Detroit 32, Mich.

USE REPLY CARD—CIRCLE No. 12

Pressure Testing Machine

. . . spots gas passage leaks

Pressure tester detects and locates leaks in gas passages in cast iron exhaust manifolds. Manifolds are loaded manually into the test area where exhaust gas areas are sealed in three planes by rubber-faced, air cylinder-controlled sealing pads. Pressure build-up in the air cylinder-controlled circuits when the pads contact the manifold causes an automatic test cycle to start. Manifold is then charged

THRU-THE-AIR "EXPRESS" HANDLING IN YOUR PLANT

for loads up to 15 tons

Never any delay the Trav-Lift handling way! Heavy loads move up and *over* floor congestion . . . transported by *one* man anywhere in the entire area of crane service. And all without rehandling!

The P&H Trav-Lift crane gives you precision handling at *lasting* low cost. It's custom built to your needs from money-saving standard designs . . . with various spans and lifting speeds and a choice of cage or floor push-button control. If your requirements demand intermittent crane service, then you need the Trav-Lift . . . built only by P&H, consistent leader in the field of overhead handling equipment. Call a P&H materials handling engineer. You'll be helped *more* by his specialized experience.

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Here's the *right* start for an *exact* finish . . . Simonds bulletin on internal grinding wheels. It tells you *why* they're right . . . *why* they grind fast and cool . . . *why* they give the same high precision each time you order them.

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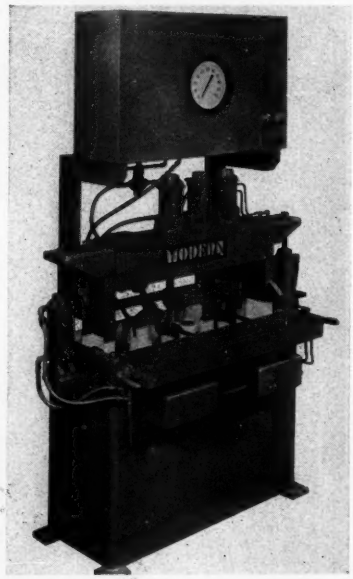
with a specific volume of air trapped in the gas areas.

Pressure loss over a given preset test time is indicated by a gage in



the machine head. Modern Industrial Engineering Co., Dept ST, 14230 Birwood, Detroit 4, Mich.

USE REPLY CARD—CIRCLE No. 13

Bonding Agent

. . . retains drill jig bushings

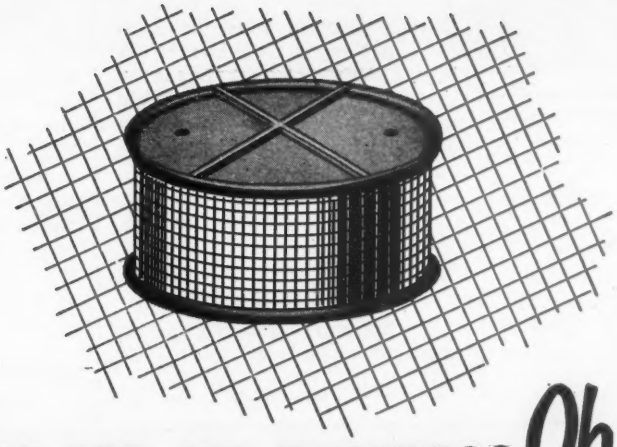
B-K No. 7 cement is for locating and retaining drill jig bushings without distortion of the jig plate or misalignment of the hole pattern. It eliminates lapping of press fit bushings after assembly. Cement is not affected by heat generated during drilling. Bushings can be retained in steel, aluminum or fiberglas jigs. Sheridan Products, Dept. ST, 1954 E. Hyde Park Blvd., Inglewood 3, Calif.

USE REPLY CARD—CIRCLE No. 14

Self-Sticking Masks

. . . for anodized surfaces

Quik-Masks, made of Minnesota Mining & Mfg Co.'s No. 214 paper masking tape, have been developed for use on anodized surfaces during high temperature baking cycles. Made to customer's specifications, they are precut to exact size and shape of area that must be pro-



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WORCESTER WIRE WORKS...*Worcester, Mass.*...Round and Shaped Steel Wire, Small Sizes

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tected. They can be removed after baking without leaving a trace of residue. W. H. Brady Co., Dept. ST, 16 E. Spring St., Chippewa Falls, Wis.

USE REPLY CARD—CIRCLE No. 15

Precision Height Gages

. . . perform double duty

Improvements have been made on the 12, 18 and 24-inch precision height gages. One is a universal clamp that eliminates the need for extra attachment when dial gage use is necessary. Gage marker has been modified so that it can be used with a depth measuring rod attachment without use of an extra clamp. Homestrand Inc., Dept. ST, Larchmont, N. Y.

USE REPLY CARD—CIRCLE No. 16

Reamer Grind

. . . rough, finish ream, burnish

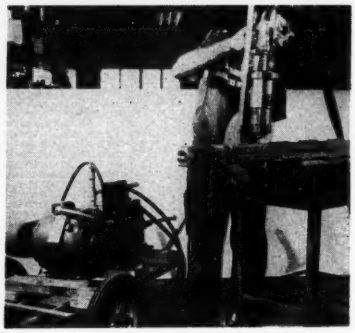
This method of grinding enables users to rough and finish ream and burnish in one operation. Reamer is ground 0.005-inch to 0.010-inch undersize the first ½-inch and builds up to finish ream size. Above the finish ream section, lands are circular ground for burnishing to produce a micro finish. Flute long reamer is carbide tipped the full length of the flute. Super Tool Co., Dept. ST, 21650 Hoover Rd., Detroit 13, Mich.

USE REPLY CARD—CIRCLE No. 17

Portable Riveting Tool

. . . operates by hydraulic valve

Portable riveter, model R-20-185, is operated by means of a manual control hydraulic valve that requires the operator only to depress a hand lever on the riveting head to produce riveting action. When full pressure — adjustable to 30 tons — is reached, valve automatically provides ram retraction. Release of valve will retract ram at any point in riveting cycle.



Power is supplied by a 10,000 psi hydraulic pump operating from a 2-hp 220/440-v, 3-phase motor. Yoke is removable to accommodate a variety of special operations. Use of the valve eliminates electrical switches, relays, solenoids and special valves formerly required for remote operation. Manco Mfg. Co., Dept. ST, Bradley, Ill.

USE REPLY CARD—CIRCLE No. 18

Pressure Transducer

. . . measures surges, pulsations

Rapid transient pressure surges and high frequency pressure pulsations encountered in processing equipment and hydraulic control systems can be measured with type 4-301 pressure transducer.

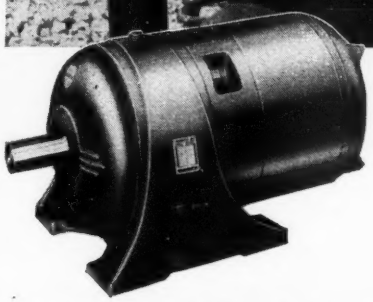
For machine screws, wood screws, drive screws, specials, etc. These machines have automatic feed and self-lubrication. They feature accuracy, easy setup, rigidity and table-top working level. Model A-312 rolls screws from .138 through 5/16" diameter with thread lengths up to 2½". Smaller model A-190 rolls from .086 through .190 inches diameter with thread length up to 1½".

When it comes to production —

HARTFORD Special

THE HARTFORD SPECIAL MACHINERY CO., HARTFORD 12, CONN.

FOOTE BROS.-LOUIS ALLIS GEARMOTOR installed on Propane input pump for underground storage in a field processing plant.



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IT'S FOOTE BROS-LOUIS ALLIS GEARMOTORS FOR SERVICE

Out in the oil fields, there's no time to "baby" equipment. Quality counts and quality must be coupled with the rugged, sturdy ability to stand up under day-in and day-out service.

It is on jobs like these that the inherent stamina — the high quality — of Foote Bros.-Louis Allis Gearmotors prove themselves.

Compact in design, quality built throughout, these gearmotors incorporate Duti-Rated Gears with file-hard surfaces and resilient cores. The cast iron housings give rigidity, and the large oil reservoir with splash lubrication means continuous trouble-free operation.

Foote Bros.-Louis Allis Gearmotors are available in single, double, and triple reductions, to provide output speeds of 780 down to 7.5 r.p.m. and capacities from 1 h.p. through 150 h.p. Open drip-proof, splash-proof, enclosed and explosion-proof motor enclosures are available.

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Pin and wedge design affords more blades per reamer diameter which in turn makes for better finish and maintenance of size. Easy adjustment, quick set-up and sturdy, non-shift blade mounting provide long economical operation.

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NEW PRODUCTS and equipment

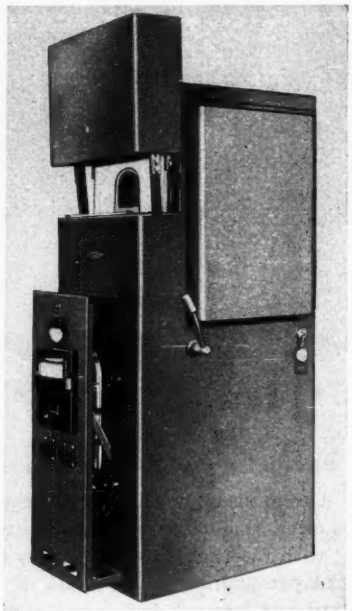
Output may be recorded on an oscillograph or may be used to indicate pressure changes on meters or oscilloscopes which can be monitored visually or photographed. Consolidated Engineering Corp., Dept. ST, 300 N. Sierra Madre Villa, Pasadena 8, Calif.

USE REPLY CARD—CIRCLE No. 19

Box and Muffle Furnaces

. . . have dual-temperature range

Unit-Package box and muffle furnaces, in a five-model line, are dual-purpose units built for low and high-temperature use. Range from



600 to 2000° F performs routine sintering and ashing operations. Above 2000° F the same furnaces are equally adaptable for such services as melting, fusing and high-speed hardening.

Made for analysis; control and production, furnace heating cham-

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REPLY CARD
Just circle the corresponding number of any item in this section for more information.

Yours FOR THE ASKING

TEAR OUT CARD, FILL IN and MAIL TODAY!

72. Fluid Line Couplings

Hansen Mfg. Co.—40-page illustrated catalog 50 is descriptive of complete line of pressure and vacuum fluid line couplings for pneumatic, hydraulic, oxygen, acetylene, steam, gas and liquid service. Quick-connective couplings and hose clamps are offered in range of sizes and constructions to meet practically every fluid line need.

73. Safety Equipment

Boyer-Campbell Co.—144-page illustrated catalog 100 is aptly entitled "Everything for Safety." It describes face shields, welding and safety helmets, goggles, protective skin creams and liquids, clothing, machine guards and hundreds of other products which assure safety to personnel in industrial plants.

74. Space Heaters

Dravo Corp., Machinery Div. — With winter upon us, you should be interested in this revised 12-page bulletin No. 523-B on Counterflo space heaters. Eight applications are covered, including functional heating, process drying and temporary heating. Oil or gas direct-fired units have capacities from 400,000 to 2,000,000 Btu per hour.

75. Cemented Carbide Tools

Kennametal Inc.—Complete picture of the variety and range of sizes of cemented carbide tools available is presented in this 64-page illustrated catalog 52. It lists brazed tools, blanks, top-clamp Kennamatic tools, Kendex tools, Kennamills and many others. Specs, properties, general data are given.

76. Heat Enclosure Methods

M. H. Detrick Co.—Here is a well-prepared wire-bound booklet of 48-pages that begins with the origin and development of arch construction as used for heat retention. Various refractory developments, their applications and features are explained. Flat suspended arches, sectionally supported walls, boilers, soaking pit covers and many other applications are covered. Fuel as it affects furnace design, engineering fundamentals and wall development are among other subjects.

77. Crane Motors & Controls

Harnischfeger Corp.—Complete line of electrical equipment designed exclusively for overhead crane service is subject matter of 32-page bulletin C5-1. Covered by photos, charts, drawings and text are alternating and direct current motors, electric and hydraulic brakes, manual drum and magnetic controllers, contactors, resistors, panels, limit switches and collectors.

78. Specifying Boxes

Hinde & Dauch Paper Co.—So you're shipping your products in corrugated boxes? Well, here is a 20-page illustrated booklet, No. 7 in the Little Packaging Library, entitled "How To Specify Corrugated Boxes." It delves into regulations, sizes, types, products that can be handled, methods of shipping, sealing, etc.

79. Inclinable Power Presses

Sales Service Machine Tool Co.—Eight models in line of Press-Rite open back inclinable power presses, with capacities of 5, 10, 15, 20, 30, 60 and 85 tons, are described and illustrated in 8-page bulletin P-552.

80. Fork Lift Trucks

Buda Co.—Descriptive text, pictures, specifications and lift and weight data comprises subject matter of 8-page brochure 1570 which covers FT series of fork lift trucks available in capacities from 3000 to 7500 lb. These trucks which drive like automobiles include both Diesel or gasoline engine powered models.

11-17-52

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Penton Building, Cleveland 13, Ohio

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Readers Service Dept.

81. Overhead Handling

Cleveland Crane & Engineering Co., Cleveland Tramrail Div.—What Tramrail overhead materials handling equipment consists of and how it can be applied is told in revised 12-page booklet No. 2008-H. New material covers track design, track stresses and the solution to track peening. Flexible method of track support, carrier designs, motor head construction, track switches, cranes, interlocks and electrification are also covered.

82. Protective Wrapping

Sisalkraft Co.—Fibreen is a wrapping and protective material, strong, moistureproof and dirtproof, which is seeing a wide variety of applications in wrapping of steel and aluminum sheets and coils, protecting machinery during shipment, covering bulk cargoes, ad infinitum. These, and more, are described and illustrated in 28 pages of this metal-bound brochure. Samples are included.

83. Liquefied Gas Data

Arthur D. Little, Inc.—The production, handling and storage of liquefied gases is subject of 24-page illustrated treatise. Various equipment and recommended techniques are dealt with, together with such factors as thermodynamics, heat transfer, refrigeration, vacuum engineering, gas liquefaction, electromagnetism, mechanical design and vibration.

84. Descaling Furnaces

Drever Co.—"Salt Bath Descaling Furnaces" is title of 12-page bulletin B-40 which describes and illustrates equipment used in continuous and batch descaling lines. Process is used for iron and steel, bronze, copper, stainless steel, titanium and other metals in form of wire, rod, strip, plate, sheet, castings, forgings, stampings, fabricated assemblies and welds.

85. Bronze Welding Rod

Eutectic Welding Alloys Corp.—Leaflet TIS 997-P contains specifications and technical data on Eutec-Rod 148FC, a bronze welding rod with a flux coating that permits the alloy to bond "automatically," even on dirty cast iron, thus minimizing the possibility of weld failure. It flows evenly where directed without extensive chamfering. Tensile strength is 55,000 psi.

86. Induction Heating

Ohio Crankshaft Co., Tocco Div.—Here's an important tool for every plant that requires quick heating for hardening, brazing, soldering, forming, annealing, melting and hundreds of other operations. "Induction Heating" is covered as to principles, applications and available equipment in 68-page catalog 22. It's a compendium of easily understood information on this versatile process.

EDITORIAL REPRINTS:

87. Ultrasonic Cleaning

"Ultrasonic Cleaning Pays Off for Small Parts" is title of STEEL reprint descriptive of method of removing oil, grease, chips, dirt, lapping compound and other contaminants from the surface of small precision workpieces. Job is done by beaming a high-frequency sound wave through the cleaning solvent or detergent solution to the surface of the submerged workpiece.

88. Bigger Tool Steel Bars

Tendency for carbide to concentrate in the center of tool steel bars has held down size produced. Now, with the brittle areas dispersed, high speed steel comes bigger. D. P. Hughes, Latrobe Steel Co. metallurgist, tells the inside story on this carbide segregation problem in STEEL reprint "Bigger Tool Steel Bars."

89. High Temperature Metals

B. P. Planner, James H. Knapp Co. metallurgist, in STEEL reprint "High Temperature Metallurgy: Jetomic Age Demands It" gives readers a peek at every day problems metallurgists face to meet the demands for metals that will withstand ever higher operating temperatures. Author gives consideration to metals and their alloys, ceramic coated metals, ceramic bodies and metal and ceramic combinations.

90. Conveyors Up Production

With a linking network of roller conveyors, Brown & Sharpe has cut manufacturing costs by about 30 per cent. Close scheduling keeps steady flow of screw machines. For the full story on this system which will ultimately be used in assembly of grinders and milling machines, get STEEL reprint "Conveyors Boost Machine Tool Production."

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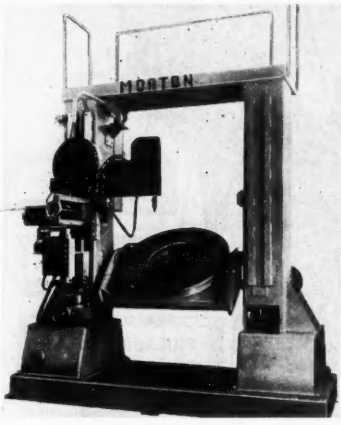
bers are offered in various sizes, all designed for accessibility. All employ rod-shaped silicon carbide elements. Burrell Corp., Dept. ST, 2223 Fifth Ave., Pittsburgh 19, Pa.

USE REPLY CARD—CIRCLE No. 20

Universal Girth Welder

. . . offers variable rotation

This universal girth welding machine offers a tilting table with variable rotation speeds. Columns supporting the table also support the overhead platform for mounting power source and allied equipment. Machined slides are furnished on the four column surfaces for mounting multiple welding equipment. Vertical operation of the saddle is accomplished manually or under power-driven control.



Welder has 50-inch vertical saddle adjustment, 11-inch horizontal crossrail adjustment, and 24-inch head mounting block adjustment. Table tilts 300 degrees with a 20 to 1 rotation ratio. Table carries a maximum 10-ton load. Morton Mfg. Co., Dept. ST, Muskegon Hts., Mich.

USE REPLY CARD—CIRCLE No. 21

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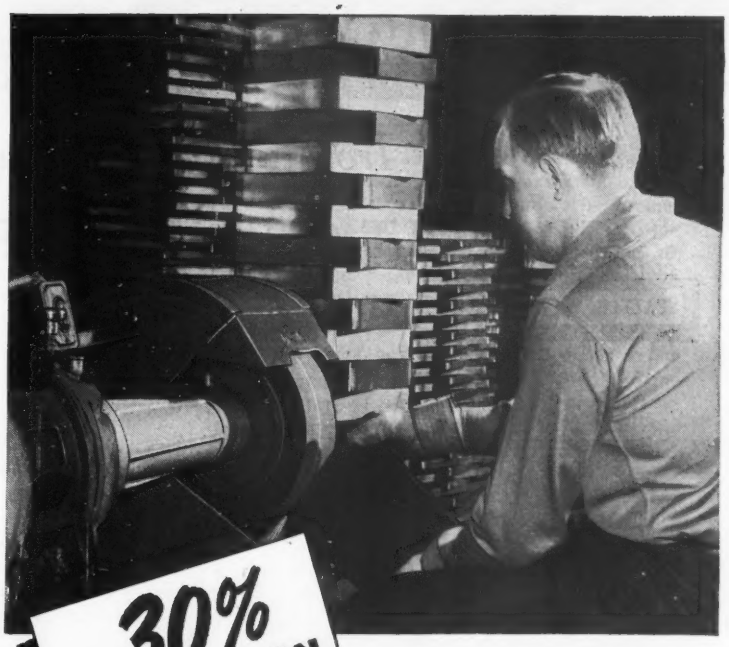

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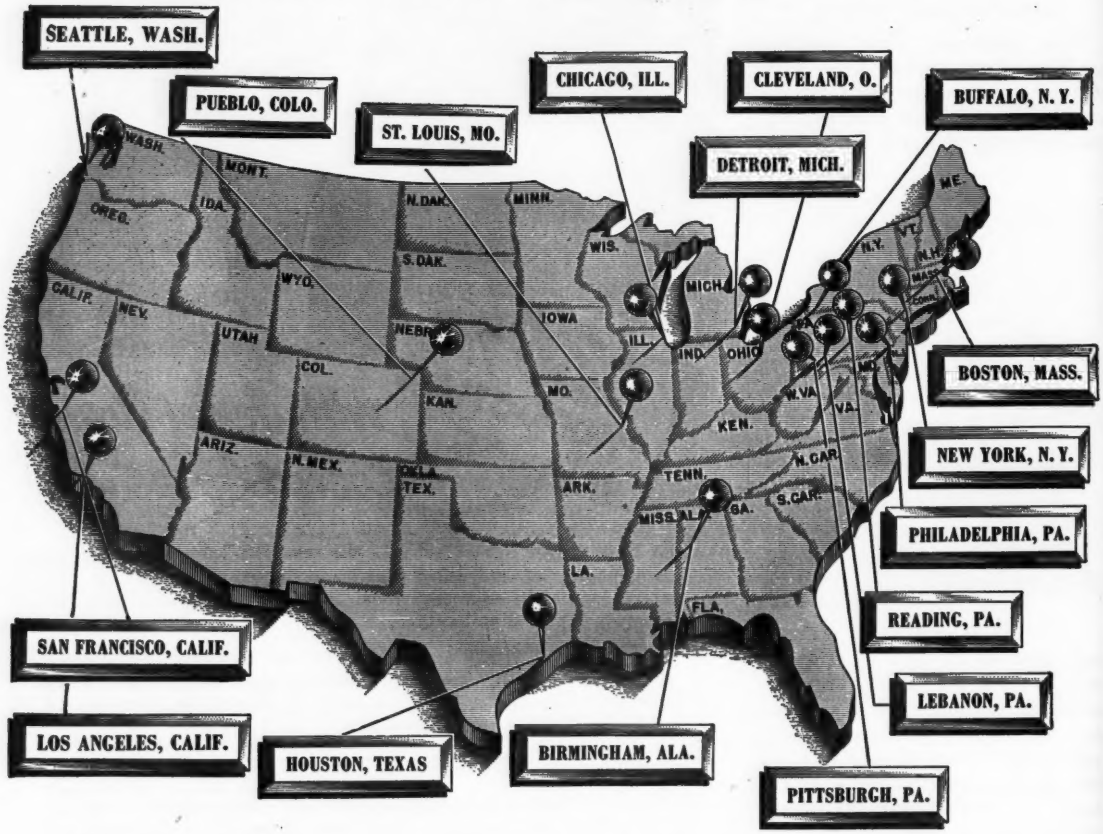

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

The Market Outlook

STEEL PRODUCTION this year in the United States will be the third largest in history, despite a two-months' strike of steelworkers. The only years eclipsing 1952 will be 1951 and 1950.

Output this year will exceed 90 million net tons of steel for ingots and castings, and conceivably may reach 93.5 million tons. Production in the record year of 1951 was 105.2 million tons. In 1950 it was 96.8 million tons.

RECORD MONTH—Production in the first ten months of 1952 totals 74,010,497 net tons, with October's output of 9,790,000 tons setting a new all-time record for a month. Previous monthly record was made in March of this year, with 9,404,191 tons.

The country's steel production capacity is still growing, so it's possible that more new records will be cast. But even if November and December fall somewhat below October the total for the year should be at least 90 million tons. If November and December each only equal October, the year's total would be 93.5 million tons.

STEADY PACE — Current production remains steady and high. Rate during the week ended Nov. 15 was 106 per cent of capacity.

The high rate of output and the catching up on orders accumulated during the steelworkers' strike are again building pressure for removal of government controls on steel. The Steel Products Industry Advisory Committee will meet tomorrow to consider decontrol plans for recommendation to the government. Such plans were considered last spring; the advisory committee and the government were endeavoring to blend ideas when the steel strike intervened.

THEIR AIM—Controls on distribution and use of steel are due to expire June 30, 1953, but steel industry leaders hope this date can be stepped up by at least three months.

Evidence of the improved supply of steel is the approval given by the government for distribution of 1,480,000 additional tons of carbon steel during the first quarter of 1953. This tonnage is confined to seven product classes but that was expected. Loosening of the steel supply comes product by product and plant by plant. Recognizing this, the government will review the situation again before Dec. 10, and, if possible, make another supplemental distribution for first-quarter use.

TIGHT TO THE LAST—Some metalworking plants think their only steel supply problem in the first quarter will concern bars over an inch in diameter. Helping ease pressure around the second quarter will be a new bar mill at the Pittsburgh works of Jones & Laughlin Steel Corp.

Plate demand continues well ahead of supply and first-quarter order books have virtually no more openings for nondefense tonnage. Especially strong are demands for sheared plate 3/16 inch and thicker.

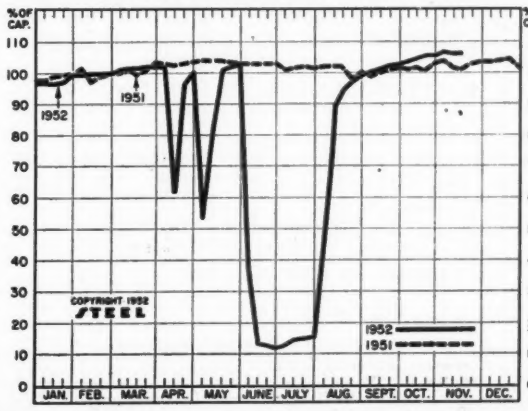
BUILDING UP—Structural steel supply is catching up with demand as a result of government limitations on construction. Relaxation of such restrictions should be followed with a good demand for structurals and reinforcing bars in view of the passage at the recent election of $1.3 billion worth of bond issues for construction of public facilities, particularly school buildings. Atomic projects also will be big users of structurals and reinforcing steel.

Hot-rolled and cold-rolled steel sheets continue in firm demand, particularly from the automotive and appliance fields. Several mills are increasing allotments of galvanized sheets.

SPRINGING BACK—Demand for upholstery spring wire strengthened. Wire users supplying the automotive industry are pressing for delivery. There are signs of revival in demand for brass-coated tire bead wire; volume has been low because of heavy inventories of wire and tires.

Although steel mills' heavy production requires a vast amount of steel scrap most of them are well fixed on this material. Slow business among foundries keeps down demand for cast scrap.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Nov. 15	Change	Same Week 1951	Same Week 1950
Pittsburgh	105	0*	102	104
Chicago	111.5	0*	106	104
Mid-Atlantic	99	0	101	100
Youngstown	106	0	106	104
Wheeling	100.5	+ 1	99	99.5
Cleveland	112	+ 2*	99	102
Buffalo	106.5	+ 0.5	104	104
Birmingham	105.5	0	50	100
New England	88	— 3	90	91
Cincinnati	94	— 2	103	106
St. Louis	98	0	88.5	95
Detroit	106	0*	104	106
Western	104	— 2.5	102	101
Estimated national rate	106	0	101	102.5

Based on weekly steelmaking capacity of 2,077,040 tons in 1952; 1,999,034 tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950.

* Change from revised rate for preceding week.

The Metalworking Outlook—p. 49 *Production-Engineering News—p. 85*

Composite Market Averages

FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics	Nov. 11 1952	Nov. 4 1952	Month Ago	October Average
(1947-1949)=100	130.5	130.5	130.7	130.7

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended Nov. 11, 1952

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see inser following p. 28, STEEL, Sept. 8, 1952.

Rails	$3.775	Sheets, C.R. carbon	$5.275
Track spikes	6.650	Sheets, galv.	6.915
Track bolts	9.958	Strip, C.R. carbon	5.100
Tie plates	4.775	Strip, C.R. stainless (lb)	0.325
Joint bars	4.925	Pipe, black, buttweld (100 ft).	7.090
Plates, carbon	4.150	Pipe, galv., buttweld (100 ft)..	8.887
Structural shapes	4.200	Boiler tubes (100 ft)	31.663
Bars, tool steel (lb)	1.576	Tin plate (100 lb base box)...	8.950
Bars, 3120 alloy	8.575	Terne plate (100 lb base box(	7.750
Bars, stainless (lb)	0.149	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv.	6.458
Bars, reinforcing	4.050	Nails (100 lb kegs)	7.390
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool(..	5.920
Sheet, H.R. carbon	4.125	Woven wire fence (20 rod roll)	13.720

FINISHED PRICE INDEX, Weighted: Calculated by STEEL*	Nov. 13 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	181.31	181.31	181.31	171.92	129.28
Index in cents per lb	4.912	4.912	4.912	4.657	3.502

ARITHMETICAL PRICE COMPOSITES: Calculated by STEEL*

Finished Steel NT	$110.98	$110.98	$110.98	$106.32	$76.09
No. 2 Fdry, Pig Iron, GT	55.04	55.04	55.04	52.24	36.89
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	36.42
Malleable Pig Iron, GT	55.77	55.77	55.77	53.27	37.54
Steelmaking Scrap, GT	43.00	43.00	43.00	43.00	40.42

* For explanation of weighted index see STEEL, Sept. 19, 1949, p54; of arithmetical price conmposites, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Nov. 13 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del. Philadelphia	4.502	4.502	4.502	4.223	3.318
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del., Philadelphia	4.13	4.13	4.13	3.918	2.954
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.15
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.15
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.70
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.90
Strip, H.R., Pittsburgh	3.75-4.225	3.75-4.225	3.75-4.225	3.75-4.00	2.80
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.55
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.65
Strip, C.R., Detroit	5.30-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.70
Wire, Basic, Pittsburgh	5.10-5.225	5.10-5.225	5.10-5.225	4.85-5.10	3.675
Nails, Wire, Pittsburgh	6.20-6.35	6.20-6.35	6.20-6.35	5.90-6.20	4.625
Tin plate box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$5.75
SEMIFINISHED					
Billets, forging, Pitts. (NT)	$70.50	$70.50	$70.50	$66.00	$56.50
Wire rods, ⅜-⅝", Pitts.	4.425	4.425	4.425	4.10-30	3.05
PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.50	$55.50	$55.50	$53.00	$37.00
Basic, Valley	54.50	54.50	54.50	52.00	36.00
Basic, del. Phila.	59.25	59.25	59.25	56.61	38.84
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	36.50
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	36.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	36.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.11	39.34
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	34.88
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	55.49	38.74
Malleable, Valley	55.00	55.00	55.00	52.50	36.50
Malleable, Chicago	55.00	55.00	55.00	52.50	36.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	50.00
Ferromanganese, Etna, Pa.	228.00	228.00	228.00	188.00	151.00*

* F.o.b. cars, Pittsburgh.

SCRAP, Gross Ton (including Broker's commission)					
No. 1 Heavy Melt, Pitts.	$44.00	$44.00	$44.00	$44.00	$40.00
No. 1 Heavy Melt, E. Pa.	41.50	41.50	41.50	42.50	42.50
No. 1 Heavy Melt, Chicago	42.50	42.50	42.50	42.50	38.75
No. 1 Heavy Melt, Valley	44.00	44.00	44.00	44.00	40.00
No. 1 Heavy Melt, Cleve.	43.00	43.00	43.00	43.00	40.00
No. 1 Heavy Melt, Buffalo	43.00	43.00	43.00	43.00	42.50
Rails, Rerolling, Chicago	52.50	52.50	52.50	52.50	55.50
No. 1 Cast, Chicago	50.00	50.00	50.00	49.00†	49.00

† F.o.b. shipping point.

COKE, Net Ton					
Beehive, Furn, Connisvl.	$14.75	$14.75	$14.75	$14.75	$12.00-12.50
Beehive, Fdry, Connisvl.	17.00	17.00	17.00	17.50	14.00-15.00
Oven Fdry, Chicago	23.00	23.00	23.00	23.00	17.60

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$56.50	$57.00	$57.50	$58.00
NewYork, del.	....	60.78	61.28	....
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
AlabamaCity, Ala. R2	50.88	51.38	....	....
Birmingham R2	50.88	51.38	....	....
Birmingham S9	....	51.38	....	....
Woodward, Ala. W15	50.88	51.38	....	....
Cincinnati, del.	....	58.93	....	....
Buffalo District				
Buffalo R2	54.50	55.00	55.50	....
Buffalo H1	54.50	55.00	55.50	....
Tonawanda, N.Y. W12	54.50	55.00	55.50	....
No. Tonawanda, N.Y. T9	....	55.00	55.50	....
Boston, del.	65.15	65.65	66.15	....
Rochester, N.Y. del.	57.52	58.02	58.52	....
Syracuse, N.Y. del.	58.62	59.12	59.62	....
Chicago District				
Chicago I-3	54.50	55.00	55.00	55.50
Gary, Ind. U5	54.50	....	55.00	....
IndianaHarbor, Ind. I-2	54.50	....	55.00	....
So. Chicago, Ill. W14	54.50	55.00	55.00	....
So. Chicago, Ill. Y1	54.50	55.00	55.00	....
So. Chicago, Ill. U5	54.50	....	55.00	55.50
Milwaukee del.	56.67	57.17	57.17	57.67
Muskegon, Mich. del.	....	61.30	61.30	....
Cleveland District				
Cleveland A7	54.50	55.00	55.00	55.50
Cleveland R2	54.50	55.00	55.00	....
Akron, O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain, O. N3	54.50	....	....	55.50
Duluth I-3	....	....	55.00	....
Erie, Pa. I-3	54.50	55.00	55.00	55.50
Everett, Mass. E1	....	59.25	59.75	....
Fontana, Calif. K1	60.50	61.00	....	....
GraniteCity, Ill. G4	56.40	56.90	57.40	....
St. Louis, del. (inc. tax)	57.15	57.65	58.15	....
Ironton, Utah C11	54.50	55.00	....	....
Geneva, Utah C11	54.50	55.00	....	....
LoneStar, Tex. L6	50.50	*51.00	51.00	....
Minnequa, Colo. C10	56.50	57.50	57.50	....
Rockwood, Tenn. T3	....	....	58.50	....
Pittsburgh District				
NevilleIsland, Pa. P6	....	55.00	55.00	55.50
Pitts., N.&S. sides, Ambridge				
Aliquippa, del.	....	56.37	56.37	56.87
McKeesRocks, del.	....	56.04	56.04	56.54
Lawrenceville, Homestead, Wilmerding, Monaca, del.	....	56.66	56.66	57.16
Verona, Trafford, del.	....	57.19	57.19	57.69
Brackenridge, del.	....	57.45	57.45	57.95
Bessemer, Pa. U5	54.50	....	55.00	55.50
Clairton, Rankin, So. Duquesne, Pa. U5	54.50	....	....	....
McKeesport, Pa. N3	54.50	....	....	55.50
Monessen, Pa. P7	56.50	....	....	....
Sharpsville, Pa. S6	....	....	55.00	55.50
Steelton, Pa. B2	56.50	57.00	57.50	58.00
Swedeland, Pa. A3	58.50	59.00	59.50	60.00
Toledo, O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47	....	....
Troy, N.Y. R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard, O. Y1	54.50	55.00	55.00	....
Youngstown Y1	54.50	55.00	55.00	....
Youngstown U5	54.50	....	....	55.50
Mansfield, O., del.	59.15	59.65	59.65	60.15

* Low phos, southern grade.

PIG IRON DIFFERENTIAL

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson, O. G2, J1	$65.50
Buffalo H1	66.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls, N.Y. P15	$91.00
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee, Wash., OH & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$59.50
Steelton, Pa. B2	62.50
Philadelphia, delivered	66.05
Troy, N.Y. R2	62.50

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, Nov. 13, 1952, cents per pound except as otherwise noted. Changes shown in italics
Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$81.00
Munhall,Pa. U5 .....54.00
Seattle S24 .....75.00

INGOTS, Alloy (NT)
Detroit R7 .....$57.00
Fontana,Calif. K1 .....83.00
Houston S5 .....65.00
Midland,Pa. C18 .....54.00
Munhall,Pa. U5 .....57.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 .....$59.00
Clairton,Pa. U5 .....59.00
Ensley,Ala. T2 .....59.00
Fairfield,Ala T2 .....59.00
Fontana,Calif. K1 .....78.00
Gary,Ind. U5 .....59.00
Johnstown,Pa. B2 .....59.00
Lackawanna,N.Y. B2 ..59.00
Munhall,Pa. U5 .....59.00
So.Chicago,Ill. U5 .....59.00
So.Duquesne,Pa. U5 ...59.00

Carbon, Forging (NT)
Bessemer,Pa. U5 .....$70.50
Buffalo R2 .....70.50
Canton,O. R2 .....70.50
Clairton,Pa. U5 .....70.50
Cleveland R2 .....70.50
Conshohocken,Pa. A3 ..77.50
Detroit R7 .....73.50
Ensley,Ala. T2 .....70.50
Fairfield,Ala. T2 .....70.50
Fontana,Calif. K1 ....89.50
Gary,Ind. U5 .....70.50
Geneva,Utah C11 .....70.50
Houston S5 .....78.50
Johnstown,Pa. B2 ....70.50
Lackawanna,N.Y. B2 ..70.50
LosAngeles B3 .....89.50
Munhall,Pa. U5 .....70.50
Seattle B3 .....89.50
So.Chicago R2,U5,W14..70.50
So.Duquesne,Pa. U5 ...70.50
So.SanFrancisco B3 ...89.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$76.00
Buffalo R2 .....76.00
Canton,O. R2 .....76.00
Canton,O. T7 .....78.60
Conshohocken,Pa. A3 ..83.00
Detroit R7 .....79.00
Fontana,Calif. K1 .....95.00
Gary,Ind. U5 .....76.00
Houston S5 .....84.00
Ind.Harbor,Ind. Y1 ...76.00
Johnstown,Pa. B2 ....76.00
Lackawanna,N.Y. B2 ..76.00
LosAngeles B3 .....96.00
Massillon,O. R2 .....76.00
Midland,Pa. C18 .....70.00
Munhall,Pa. U5 .....76.00
So.Chicago R2,U5,W14.76.00
So.Duquesne,Pa. U5 ...76.00
Struthers,O. Y1 .....76.00
Warren,O. C17 .....76.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$87.50
Canton,O. R2 .....87.50
Cleveland R2 .....87.50
Fontana,Calif. K1 ....108.50
Gary,Ind. U5 .....87.50
Massillon,O. R2 .....87.50
So.Chicago,Ill. R2 ....87.50
So.Duquesne,Pa. U5 ...87.50

SHEET BARS (NT)
Fontana,Calif. K1(43) .$89.00

SKELP
Aliquippa,Pa. J5 .....$3.65
Munhall,Pa. U5 .....3.55
Warren,O. R2 .....3.55
Youngstown R2, U5 ....3.55

WIRE RODS
Alton,Ill. L1 .....4.70
AlabamaCity,Ala. R2 ..4.325
Buffalo W12 .....4.325
Cleveland A7 .....4.325
Donora,Pa. A7 .....4.325
Fairfield,Ala T2 .....4.325
Fontana,Calif. K1 ....5.125
Houston S5 .....4.725
Johnstown,Pa. B2 ....4.325
Joliet,Ill. A7 .....4.325
KansasCity,Mo. S5 ....4.665
LosAngeles B3 .....5.125
Minnequa,Colo. C10 ...4.575
Monessen,Pa. P7 .....4.525
No.Tonawanda,N.Y.B11 4.325
Pittsburg,Calif. C11 ..4.975
Portsmouth,O. P12 ....4.525
Roebling,N.J. R5 .....4.425
So.Chicago,Ill. R2 .....4.325
SparrowsPoint,Md B2..4.425
Sterling,Ill.(1) N15 ...4.325
Struthers,O. Y1 .....4.325
Torrance,Calif. C11 ...5.125
Worcester,Mass. A7 ....4.625

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ...4.675
Lackawanna,N.Y. B2 ...4.675
Munhall,Pa. U5 .....4.675
So.Chicago,Ill. U5 .....4.675

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.85
Aliquippa,Pa. J5 .....3.85
Bessemer,Ala. T2 .....3.85
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fairfield,Ala. T2 .....3.85
Fontana,Calif. K1 .....4.45
Gary,Ind. U5 .....3.85
Geneva,Utah, C11 .....3.85
Houston S5 .....4.25
Ind.Harbor,Ind. I-2 ....3.85
Johnstown,Pa. B2 .....3.90
KansasCity,Mo. S5 ....4.45
Lackawanna,N.Y. B2 ..3.90
LosAngeles B3 .....4.45
Minnequa,Colo. C10 ....4.30
Munhall,Pa. U5 .....3.85
Niles,Calif.(22) P1 ....4.56
Phoenixville,Pa. P4 ....6.10
Seattle B3 .....4.50
So.Chicago,Ill. U5, W14..3.85
So.SanFrancisco B3 ....4.40
Torrance,Calif. C11 ....4.45
Weirton,W.Va. W6 .....4.10

Wide Flange
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fontana,Calif. K1 .....4.85
Johnstown,Pa. B2 .....3.90
Lackawanna,N.Y. B2 ...3.90
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85

Alloy Stand. Shapes
Clairton,Pa. U5 .....4.725
Fontana,Calif. K1 ....5.925
Gary,Ind. U5 .....4.725
Munhall,Pa. U5 .....4.725
So.Chicago,Ill. U5 .....4.725

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.80
Bessemer,Ala. T2 .....5.80
Bethlehem,Pa. B2 .....5.80
Clairton,Pa. U5 .....5.80
Fairfield,Ala. T2 .....5.80
Fontana,Calif. K1 .....6.40
Gary,Ind. U5 .....5.80
Geneva,Utah C11 .....5.80
Ind.Harbor,Ind. I-2 ....5.80
Ind.Harbor,Ind. Y1 .....6.30
Johnstown,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ...5.80
LosAngeles B3 .....6.35
Munhall,Pa. U5 .....5.80
Seattle B3 .....6.40
So.Chicago,Ill. U5 .....5.80
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.30

H.S., L.A. Wide Flange
Aliquippa,Pa. J5 .....5.50
Bethlehem,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ...5.80
Munhall,Pa. U5 .....5.75
So.Chicago,Ill. U5 .....5.75

BEARING PILES
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.95
Bessemer,Ala. T2 .....5.95
Clairton,Pa. U5 .....5.95
Cleveland J5, R2 .....5.95
Conshohocken,Pa. A3 ...6.20
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....5.95
Fontana,Calif.(30) K1 ..6.55
Gary,Ind. U5 .....5.95
Geneva,Utah C11 .....5.95
Ind.Harbor.Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 .....6.45
Johnstown,Pa. B2 .....5.95
Munhall,Pa. U5 .....5.95
Pittsburgh J5 .....5.95
Seattle B3 .....6.85
Sharon,Pa. S3 .....5.95
So.Chicago,Ill. U5 .....5.95
SparrowsPoint,Md. B2 ..5.95
Warren,O. R2 .....5.95
Youngstown Y1 .....6.45
Youngstown U5 .....5.95

PLATES, Open-Hearth Alloy
Claymont,Del. C22 .....5.35
Coatesville,Pa. L7 .....5.75
Conshohocken,Pa. A3 ..5.55
Fontana,Calif. K1 .....6.20
Gary,Ind. U5 .....5.25
Johnstown,Pa. B2 .....5.25
Munhall,Pa. U5 .....5.25
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.25
SparrowsPoint,Md. B2 ..5.25

FLOOR PLATES
Cleveland J5 .....4.95
Conshohocken,Pa. A3 ...4.95
Ind.Harbor,Ind. I-2 ....4.95
Munhall,Pa. U5 .....4.95
So.Chicago,Ill. U5 .....4.95

PLATES, Ingot Iron
Ashland,c.l. (15) A10...4.15
Cleveland,c.l. R2 .....4.50
Warren,O.,c.l. R2 .....4.50

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.90
Aliquippa,Pa. J5 .....3.90
Ashland,Ky (15) A10...3.90
Bessemer,Ala. T2 .....3.90
Clairton,Pa. U5 .....3.90
Claymont,Del. C22 .....4.35
Cleveland J5, R2 .....3.90
Coatesville,Pa. L7 .....4.35
Conshohocken,Pa. A3 ...4.35
Ecorse,Mich. G5 .....4.45
Fairfield,Ala. T2 .....3.90
Fontana,Calif.(30) K1 ..4.50
Gary,Ind. U5 .....3.90
GraniteCity,Ill. G4 .....4.60
Geneva,Utah C11 .....3.90
Harrisburg,Pa. C5 .....6.50
Houston S5 .....4.30
Ind.Harbor,Ind. I-2, Y1.3.90
Johnstown,Pa. B2 .....3.90
Lackawanna,N.Y. B2 ...3.90
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....3.90
Pittsburgh J5 .....3.90
Seattle B3 .....4.80
Sharon,Pa. S3 .....4.15
So.Chicago,Ill. U5, W14.3.90
SparrowsPoint,Md. B2 ..3.90
Steubenville,O. W10 ....3.90
Warren,O. R2 .....3.90
Weirton,W.Va. W6.....4.20
Youngstown R2, U5, Y1.3.90

PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.65
Geneva,Utah C11 .....5.05

PLATES, Wrought Iron
(Add 4.7% to base and extras)
Economy,Pa. B14 .....8.60

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2....3.95
Aliquippa,Pa. J5 .....3.95
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.50
Bessemer,Ala. T2 .....3.95
Buffalo R2 .....3.95
Canton,O. R2 .....3.95
Clairton,Pa. U5 .....3.95
Cleveland R2 .....3.95
Detroit R7 .....4.10
Ecorse,Mich. G5 .....4.30
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 .....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 .....4.55
Lackawanna,N.Y. B2 ...3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.40
Niles,Calif. P1 .....4.65
N.Tonawanda,N.Y. B11.3.95
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
Seattle B3, N14 .....4.70
So.Chicago R2,U5,W14 ..3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFran.,Cal. B3 ....4.70
Sterling,Ill. N15 .....4.55
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Weirton,W.Va. W6 .....4.10
Youngstown R2, U5 ....3.95

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....3.95
Atlanta A11 .....4.50
Niles,Calif. P1 .....4.65
San Francisco S7 .....5.00

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....4.15

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.675
Buffalo R2 .....4.675
Canton,O. R2 .....4.675
Canton,O. T7 .....4.72
Clairton,Pa. U5 .....4.675
Detroit R7 .....4.825
Ecorse,Mich. G5 .....5.025
Fontana,Calif. K1 .....5.725
Gary,Ind. U5 .....4.675
Houston S5 .....5.075
Ind.Harbor,Ind. I-2, Y1.4.675
Johnstown,Pa. B2 .....4.675
KansasCity,Mo. S5 .....5.275
Lackawanna,N.Y. B2 ...4.675
LosAngeles B3 .....5.725
Massillon,O. R2 .....4.675
Midland,Pa. C18 .....4.30
So.Chicago R2,U5,W14 .4.675
So.Duquesne,Pa. U5 ....4.675
Struthers,O. Y1 .....4.675
Warren,O. C17 .....4.675
Youngstown U5 .....4.675

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.925
Gary,Ind. U5 .....4.925
Youngstown U5 .....4.925

BARS & SMALL SHAPES, H. R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.925
Bessemer,Ala. T2 .....5.925
Bethlehem,Pa. B2 .....5.925
Clairton,Pa. U5 .....5.925
Cleveland R2 .....5.925
Ecorse,Mich. G5 .....6.675
Fairfield,Ala. T2 .....5.925
Fontana,Calif. K1 .....6.975
Gary,Ind. U5 .....5.925
Ind.Harbor,Ind. I-2 ....5.925
IndianaHarbor,Ind. Y1.6.425
Johnstown,Pa. B2 .....5.925
Lackawanna,N.Y. B2 ...5.925
LosAngeles B3 .....6.625
Pittsburgh J5 .....5.925
Seattle B3 .....6.675
So.Duquesne,Pa. U5 ....5.925
So.SanFrancisco B3 ....6.675
Struthers,O. Y1 .....6.425
Youngstown U5 .....5.925

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 .....4.925
BeaverFalls,Pa. R2 .....4.925
BeaverFalls,Pa. M12 ....4.925
Buffalo B5 .....4.975
Camden,N.J. P 13 .....5.375
Carnegie,Pa. C12 .....4.925
Chicago B5 .....4.925
Chicago W18 .....4.925
Cleveland A7, C20 .....4.925
Detroit P17, R7 .....5.075
Donora,Pa. A7 .....4.925
Elyria,O. W8 .....4.925
FranklinPark,Ill. N5 ..4.925
Gary,Ind. R2 .....4.925
GreenBay,Wis. F7 .....4.925
Hammond,Ind. L2,M13.4.925
Hartford,Conn. R2 .....5.475
LosAngeles R2 .....6.375
Mansfield,Mass. B5 .....5.475
Massillon,O. R2, R8 ....4.925
Monaca,Pa. S17 .....4.925
Newark,N.J., W18 .....5.375
Plymouth,Mich. P5 .....5.175
Pittsburgh J5 .....4.925
Putnam,Conn. W18 .....5.475
Readville,Mass. C14 .....5.475
St.Louis,Mo. M5 .....5.30
So.Chicago,Ill. W14 ....4.925
SpringCity,Pa. K3 .....5.375
Struthers,O. Y1 .....4.925
Waukegan,Ill. A7 .....4.925
Youngstown Y1 .....4.925
Youngstown F3 .....4.925

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....6.00
BeaverFalls,Pa. M12 ....6.00
Bethlehem,Pa. B2 .....6.00
Buffalo B5 .....6.00
Camden,N.J. P13 .....6.40
Canton,O. R2 .....6.00
Canton,O. T7 .....5.99
Carnegie,Pa. C12 .....6.00
Chicago B5 .....6.00
Chicago W18 .....6.00
Cleveland A7 .....6.05
Cleveland C20 .....6.00
Detroit P17, R7 .....6.15
Donora,Pa. A7 .....6.05
Elyria,O. W8 .....6.00
Gary,Ind. R2 .....6.00
Hammond,Ind. L2, M13.6.00
Hartford,Conn. R2 .....6.45
Lackawanna,N.Y. B2 ....6.00
Mansfield,Mass. B5 .....6.45
Massillon,O. R2, R8....6.00
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....6.00
Newark,N.J. W18 .....6.35
Plymouth,Mich. P5 .....6.20
So.Chicago,Ill. R2, W14.6.00
SpringCity,Pa. K3 .....6.20
Struthers,O. Y1 .....6.00
Warren,O. C17 .....6.00
Waukegan,Ill. A7 .....6.05
Worcester,Mass. A7 ....6.35
Youngstown Y1 .....6.00
Youngstown F3 .....6.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ...3.95
Atlanta A11 .....4.50
Buffalo R2 .....3.95
Cleveland R2 .....3.95
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 .....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 .....4.55
Lackawanna,N.Y. B2 ...3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.65
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
SandSprings,Okla. S5 ...4.85
Seattle B3, N14 .....4.70
So.Chicago,Ill. R2 .....3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFrancisco B3 ....4.70
SparrowsPoint,Md. B2 ..3.95
Sterling,Ill.(1) N15 ....4.70
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Youngstown R2, U5 ....3.95

BARS, Reinforcing
(Fabricated: to consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ...4.75
LosAngeles B3 .....5.45
Marion,O. P11 .....5.25
Seattle B3, N14 .....5.80
So.SanFrancisco B3 ....5.45
SparrowsPt. ¼-1" B2 ..4.75
Williamsport,Pa. S19 ...5.35

RAIL STEEL BARS
ChicagoHts.(3,4) C2 ...5.00
ChicagoHts.(3,4) I-2 ...4.75
Franklin.Pa.(3,4) F5 ..5.00
FortWorth,Tex.(26) T4..5.10
Huntngt,W.Va.(3) W7 ..5.75
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....4.05
Tonawanda(3,4) B12 ...5.00
Williamsport(3) S19 ....5.25
Williamsport(4) S19 ....5.35

BARS, Wrought Iron
(Add 4.7% to base and extras)
Economy,Pa.(S.R.) B14.9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt)L5. 14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ...13.00

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.775
Ashland,Ky.(8) A10 ...3.775
Butler,Pa. A10 .....3.775
Cleveland J5, R2 .....3.775
Conshohocken,Pa. A3 ..4.175
Detroit M1 .....4.40
Ecorse,Mich. G5 .....3.975
Fairfield,Ala. T2 .....3.775
Fontana,Calif. K1 ....4.725
Gary,Ind. U5 .....3.775
Geneva,Utah C11 .....3.875
GraniteCity,Ill. G4 .....4.30
Ind.Harbor,Ind. I-2, Y1.3.775
Irvin,Pa. U5 .....3.775
Lackawanna,N.Y. B2 ...3.775
Munhall,Pa. U5 .....3.775
Niles,O. N12 .....5.425
Pittsburg,Calif. C11 ....4.475
Pittsburgh J5 .....3.775
Sharon,Pa. S3 .....4.175
So.Chicago,Ill. W14 ....3.775
SparrowsPoint,Md. B2..3.775
Steubenville,O. W10 ....3.775
Torrance,Calif. C11 ....4.475
Warren,O. R2 .....3.775
Weirton,W.Va. W6 ....3.775
WestLeechburg,Pa. A4..3.925
Youngstown U5, Y1....3.775

SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ..4.925
Dover,O. R1 .....5.825
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.675
Torrance,Calif. C11 ...5.575

SHEETS, H.R. (14 ga. heavier)
High-Strength Low-Alloy
Cleveland J5, R2 .....5.675
Conshohocken,Pa. A3 ...5.925
Ecorse,Mich. G5 .....6.225
Fairfield,Ala. T2 .....5.675
Fontana,Calif. K1 .....6.625
Gary,Ind. U5 .....5.675
Ind.Harbor,Ind. I-2 ....5.675
Ind.Harbor,Ind. Y1 ....6.175
Irvin,Pa. U5 .....5.675
Lackawanna(35) B2 ...5.675
Munhall U5 .....5.675
Pittsburgh J5 .....5.675
Sharon,Pa. S3 .....5.675
So.Chicago,Ill. U5 .....5.675
SparrowsPoint(36) B2..5.675
Warren,O. R2 .....5.675
Weirton,W.Va. W6 ....6.025
Youngstown U5 .....5.675
Youngstown Y1 .....6.175

SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5, R2 .....6.925
Ecorse,Mich. G5 .....7.475
Fontana,Calif. K1 ....7.875
Gary,Ind. U5 .....6.925
IndianaHarbor,Ind. Y1.7.425
IndianaHarbor,Ind. I-2.6.925
Irvin,Pa. U5 .....6.925
Lackawanna(37) B2 ...6.925
Pittsburgh J5 .....6.925
SparrowsPoint(38) B2..6.925
Warren,O. R2 .....6.925
Weirton,W.Va. W6 ....7.275
Youngstown Y1 .....7.425

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.575
Cleveland J5, R2	4.575
Ecorse,Mich. G5	4.775
Fairfield,Ala. T2	4.575
Follansbee,W.Va. F4	5.575
Fontana,Calif. K1	5.525
Gary,Ind. U5	4.575
GraniteCity,Ill. G4	5.275
Ind.Harbor,Ind. I-2,Y1	4.575
Irvin,Pa. U5	4.575
Lackawanna,N.Y. B2	4.575
Middletown,O. A10	4.575
Pittsburg,Calif. C11	5.525
Pittsburgh J5	4.575
SparrowsPoint,Md. B2	4.575
Steubenville,O. W10	4.575
Warren,O. R2	4.575
Weirton,W.Va. W6	5.775
WestLeechburg,Pa. A4	5.45
Youngstown Y1	4.575

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	5.075
Ashland,Ky.(8) A10	5.075
Canton,O. R2	5.075
Delphos,O. N16	5.675
Dover,O. R1	5.775
Fairfield,Ala. T2	5.075
Gary,Ind. U5	5.075
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. I-2	5.075
Irvin,Pa. U5	5.075
Kokomo,Ind.(13) C16	5.475
MartinsFerry,O. W10	5.075
Niles,O. N12	6.275
Pittsburg,Calif. C11	5.825
SparrowsPoint,Md. B2	5.075
Steubenville,O. W10	5.075
Torrance,Calif. C11	5.825
Weirton,W.Va. W6	5.075

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.625
SparrowsPoint(39) B2	7.775

SHEETS, Galvannealed Steel

Canton,O. R2	5.625
Irvin,Pa. U5	5.625
Kokomo,Ind.(13) C16	6.025
Niles,O. N12	6.825

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.325
Middletown,O. A10	5.325

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.925
Niles,O. R2 (28)	5.925
Weirton,W.Va. W6	5.775

SHEETS, Well Casing

Fontana,Calif. K1 (43)	5.10
Torrance,Calif. C11	5.275

BLUED Stock, 29 ga.

Yorkville,O. W10	7.00
Follansbee,W.Va. F4	7.10
Follansbee (23) F4	6.425

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.925
Cleveland R2	4.925
Gary,Ind. U5	4.925
GraniteCity,Ill. G4	5.625
Ind.Harbor,Ind. I-2	4.925
Irvin,Pa. U5	4.925
Middletown,O. A10	4.925
Youngstown Y1	4.925

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.35

SHEETS, Culvert No. 16	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.875	....
Canton,O. R2	5.925	6.375
Fairfield,Ala. T2	5.875	6.125
Gary,Ind. U5	5.875	6.125
Ind.Harbor I-2	5.875	6.125
Irvin,Pa. U5	5.875	6.125
Kokomo,Ind. C16	6.525	....
MartinsFy.,O. W10	5.875	....
Pittsburg,Cal. C11	6.625	....
SparrowsPt. B2	5.875	....
Torrance,Cal. C11	6.625	....

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	6.125
Fairfield,Ala. T2	6.125
MartinsFerry,O. W10	6.125

SHEETS, Hot-rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	4.025
Cleveland R2	4.375
Ind.Harbor,Ind. I-2	4.025
Warren,O. R2	4.375

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10	5.075
Cleveland R2	5.175
Middletown,O. A10	5.075
Warren,O. R2	5.175

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.325
Canton,O. R2	5.825

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.575
Middletown,O. A10	5.575

SHEETS, ALUMINIZED

Butler,Pa. A10	8.425

TINPLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	...
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

TIN PLATE, Electrolytic (Base Plate)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	...	...
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut lengths ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	...	...	7.85	9.10	9.90
Brackenridge,Pa. A4	...	...	8.35	9.60	10.40
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	...
IndianaHarbor,Ind. I-2	7.55	7.85	(34)	(41)	...
Mansfield,O. E6 (cut lengths)	7.20	7.35	7.85	9.10	9.90
Niles,O. N12 (cut lengths)	...	7.85	8.35	...	...
Vandergrift,Pa. U5	...	7.85	8.35	9.60	10.40
Warren,O. R2	7.55	7.85	8.35	9.60	10.40
Zanesville,O. A10	...	7.85	8.35	9.60	10.40

SHEETS, SILICON (22 Ga. Base) COILS (Cut Length ½c lower) Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4	10.95	....	....	....
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren,O. R2	10.95	....	....	....
Zanesville,O. A10	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	15.35	15.85
Vandergrift,Pa. U5	13.50	14.35	15.35	15.85

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$8.65

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

SHEET, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10	5.475
Gary,Ind. U5	5.475
Mansfield,O. E6	6.05
Middletown,O. A10	5.475
Niles,O. N12	6.275
Weirton,W.Va. W6	5.475

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.875

ROOFING SHORT TERNES (8 lb. Coated)

Gary,Ind. U5	9.75

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.65
Conshohocken,Pa. A3	5.90
Ecorse,Mich. G5	6.30
Fairfield,Ala. T2	5.65
Fontana,Calif. K1	6.55
Gary,Ind. U5	5.65
Ind.Harb.,Ind. I-2	5.65
Ind.Harbor,Ind. Y1	6.15
Lackawanna,N.Y. B2	5.70
LosAngeles(25) B3	6.40
Seattle(25) B3	6.65
Sharon,Pa. S3	5.65
So.SanFrancisco(25) B3	6.40
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.65
Weirton,W.Va. W6	6.10
Youngstown Y1	6.15
Youngstown U5	5.65

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5	7.45
Cleveland A7	7.30
Dover,O. G6	8.00
Ecorse,Mich. G5	8.15
Lackawanna,N.Y. B2	7.90
Sharon,Pa. S3	7.30
SparrowsPoint,Md. B2	7.90
Warren,O. R2	7.30
Weirton,W.Va. W6	7.95
Youngstown Y1	7.80

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.725
Alton,Ill. L1	4.20
Ashland,Ky.(8) A10	3.725
Atlanta A11	4.275
Bessemer,Ala. T2	3.725
Bridgeprt,Conn.(10) S15	4.225
Buffalo(27) R2	3.725
Butler,Pa. A10	3.725
Carnegie,Pa. S18	4.225
Conshohocken,Pa. A3	4.125
Detroit M1	4.40
Ecorse,Mich. G5	4.025
Fairfield,Ala. T2	3.725
Fontana,Calif. K1	4.975
Gary,Ind. U5	3.725
Houston,Tex. S5	4.125
Ind.Harbor,Ind. I-2,Y1	3.725
Johnstown,Pa.(25) B2	3.725
KansasCity,Mo.(9) S5	4.325
Lackaw'na,N.Y.(32) B2	3.725
LosAngeles(25) B3	4.475
Milton,Pa. B6	4.35
Minnequa,Colo. C10	4.775
NewBritain(10) S15	4.225
N.Tonawanda,N.Y. B11	3.725
Pittsburg,Calif. C11	4.475
Riverdale,Ill. A7	3.725
SanFrancisco S7	5.00
Seattle(25) B3	4.725
Seattle N14	4.75
Sharon,Pa. S3	4.225
So.Chicago,Ill. W14	3.725
So.SanFrancisco(25) B3	4.475
SparrowsPoint,Md. B2	3.725
Sterling,Ill. N15	4.725
Torrance,Calif. C11	4.475
Warren,O. R2	3.725
Weirton,W.Va. W6	3.825
WestLeechburg,Pa. A4	3.975
Youngstown U5, Y1	3.725

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	6.05
Carnegie,Pa. S18	6.45
Fontana,Calif. K1	7.30
Gary,Ind. U5	6.10
Houston,Tex. S5	6.50
KansasCity,Mo. S5	6.70
Midland,Pa. C18	5.85
NewBritn,Conn.(10) S15	6.05
Sharon,Pa. S3	6.45
Youngstown U5	6.10

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Bridgeprt,Conn.(10) S15	5.80
Butler,Pa. A10	5.10
Cleveland A7, J5	5.10
Dearborn,Mich. D3	6.05
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	5.30
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	6.75
FranklinPark,Ill.(40) T6	5.35
Ind.Harbor,Ind. I-2	5.35
Lackawanna,N.Y. B2	5.10
LosAngeles C1	6.85
Mattapan,Mass. T6	5.95
Middletown,O. A10	5.10
NewBritain(10) S15	5.80

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Beres,O. C7	...	7.65	8.25	10.20	12.50
Bridgeport,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
Bristol,Conn. W1	...	...	8.55	10.50	....
Carnegie,Pa. S18	...	7.65	8.25	10.20	12.50
Cleveland A7	5.10	7.30	8.25	10.20	12.50
Dearborn,Mich. D3	6.05	7.90	8.50	...	....
Detroit D2	6.45	7.50	8.10	...	....
Dover,O. G6	5.70	7.65	8.25	10.20	12.50
FranklinPark,Ill. T6	5.45	7.45	8.40	10.35	12.65
Harrison,N.J. C18	...	...	8.55	10.50	12.80
Mattapan,Mass. T6	5.95	7.60	8.55	10.50	12.80
NewBritn.,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
NewCastle,Pa. B4	5.80	7.65	8.25	10.20	....
NewCastle,Pa. E5	5.80	7.65	8.25	10.20	12.50
NewHaven,Conn. D2	6.70	7.60	8.20	....	....
NewYork W3	...	7.95	8.55	10.50	12.80
Pawtucket,R.I. N8:					
Cleve.orPitts.Base	...	7.65	8.25	10.20	12.50
Worcester,Mass.,Base	6.30	7.95	8.55	10.50	12.80
Sharon,Pa. S3	5.80	7.65	8.25	10.20	12.50
Trenton,N.J. R5	...	7.95	8.55	10.50	12.80
Wallingford,Conn. W2	6.30	7.60	8.20	10.15	12.65
Warren,O. T5	6.20	7.65	8.25	10.20	12.50
Weirton,W.Va. W6	5.80	7.65	8.25	10.20	12.50
Worcester,Mass. A7	5.40	7.60	8.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	8.55	10.50	12.80
Youngstown C8	...	7.65	8.25	10.20	12.50
Spring Steel (Tempered)					
Trenton,N.J. R5 (29)	...	...	10.30	12.50	15.35
Harrison,N.J. C18	...	...	10.30	12.50	15.35
NewYork W3	...	...	10.30*	12.50*	15.35*
Youngstown C8	...	...	10.30	12.50	15.35

* Plus $1.575 per 100 lb.

STRIP, Hot-Rolled Ingot Iron	
Ashland,Ky(8) A10	3.975
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. P2	5.70

TIGHT COOPERAGE HOOP

Atlanta A11	4.45
Riverdale,Ill. A1	4.30
Sharon,Pa. S3	4.55
Youngstown U5	4.15

NewCastle,Pa. B4	5.80
NewCastle,Pa.(40) E5	5.70
NewHaven,Conn. D2	5.85
NewHaven,Conn. A7	5.60
Pawtucket,R.I. R3	6.45
Pawtucket,R.I.(21) N8	6.30
Riverdale,Ill.(40) A1	5.35
Rome,N.Y. R6	5.10
Sharon,Pa. S3	5.80
SparrowsPoint,Md. B2	5.10
Trenton,N.J. R5	6.45
Wallingford,Conn. W2	6.30
Warren,O.(40) T5	5.70
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown C8 (40)	5.70
Youngstown Y1	5.10

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.70
Weirton,W.Va. W6	5.10
Youngstown C8	5.70

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	12.15
Carnegie,Pa. S18	12.00
Cleveland A7	11.40
Dover,O. G6	11.90
Fontana,Calif. K1	13.05
Harrison,N.J. C18	12.00
Midland,Pa. C18	12.00
NewBritn,Conn.(10) S15	12.15
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown C8	12.00

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky(8) A10	3.975
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. P2	5.70

TIGHT COOPERAGE HOOP

Atlanta A11	4.45
Riverdale,Ill. A1	4.30
Sharon,Pa. S3	4.55
Youngstown U5	4.15

Key To Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet.
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div., H. K. Porter Co.
B14 A. M. Byers Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbus-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

WIRE, Merchant Quality

(6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2..	6.075	6.325
Aliquippa J5	6.075	6.45*
Atlanta A11	6.325	6.675
Bartonville(19)K4	6.075	6.40
Buffalo W12	5.225	....
Cleveland A7	6.075	6.225
Crawfordsville M8	6.175	6.55
Donora,Pa. A7 ..	6.075	6.225
Duluth,Minn. A7	6.075	6.225
Fairfield T2	6.075	6.225
Houston,Tex. S5..	6.475	6.625
Johnstown B2	6.075	6.45†
Joliet,Ill. A7	6.075	6.225
KansasCy,Mo. S5	6.675	6.825
Kokomo C16	6.175	6.425
LosAngeles B3 ..	7.025	....
Minnequa C10 ...	6.325	6.70*
Monessen P7	6.075	6.45
Palmer W12	5.525	....
Pitts.,Calif. C11..	7.025	7.175
Prtsmth.(18)P12..	6.475	....
Rankin A7	6.075	6.225
So.Chicago R2 ..	6.075	6.325
So.S.Fran. C10 ..	7.025	7.40*
SparrowsPt. B2..	6.175	6.55†
Sterling,Ill.(1)N15	6.075	6.40
Struthers,O. Y1 ..	6.075	6.475
Torrance,Cal. C11	7.025	....
Worcester A7	6.375	6.525

* Based on 14-cent zinc; † 14.50-cent zinc.

ROPE WIRE

Alton,Ill. L1	9.15
Bartonville,Ill. K4	8.95
Buffalo W12 (43)	8.55
Fostoria,O. S1 (43)	8.85
Johnstown,Pa. B2 (43)..	8.55
Monessen,Pa. P16 (43)..	8.55
Monessen,Pa. P7 (43) ..	8.80
Muncie,Ind. I-7 (43) ...	8.75
Palmer,Mass. W12 (43)..	8.85
Portsmouth,O. P12 (43)..	8.55
Roebling,N.J. R5 (43) ..	8.85
SparrowsPt. B2 (43) ..	8.65
Struthers,O. Y1 (43) ...	8.55
Worcester J4, T6 (43) ..	8.85

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2..	5.225
Aliquippa,Pa. J5 (42) ..	4.85
Atlanta A11	5.475
Alton,Ill. L1	5.45
Bartonville,Ill. K4	5.325
Buffalo W12	5.225
Chicago W13	5.475
Cleveland A7, C20	5.225
Crawfordsville,Ind. M8..	5.325
Donora,Pa. A7	5.225
Duluth,Minn. A7	5.225
Fairfield,Ala. T2	5.225
Fostoria,O. (24) S1 ...	5.725
Houston S5	5.625
Johnstown,Pa. B2	5.225
Joliet,Ill. A7	5.225
KansasCity,Mo. S5	5.825
Kokomo,Ind. C16	5.325
LosAngeles B3	6.175
Minnequa,Colo. C10	5.475
Monessen,Pa. P7	5.475
Newark 3-8 ga I-1	5.88
No.Tonawanda B11	5.225
Palmer,Mass. W12	5.525
Pittsburg,Calif. C11	6.175
Portsmouth,O. P12	5.625
Rankin,Pa. A7	5.225
So.Chicago,Ill. R2	5.225
So.SanFrancisco C10 ..	6.175
SparrowsPoint,Md. B2..	5.325
Sterling,Ill.(1) N15	5.225
Struthers,O. Y1	5.225
Torrance,Calif. C11	6.175
Waukegan,Ill. A7	5.225
Worcester,Mass. A7	5.525

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo W12 (43)	6.35
Cleveland A7 (43)	5.85
Crawf'sville,Ind. M8(43)	5.85
Dover,O. G6	6.20
Fostoria,O. S1 (43)	6.00
Kokomo,Ind. C16 (43)..	5.70
FranklinPark,Ill. T6(43)	6.20
Massillon,O. R8 (43) ..	5.85
Monessen,Pa. P16 (43)..	6.35
Monessen,Pa. P7 (43) ..	6.10
Pawtkt,R.I.(12) N5 (43)	6.85
Trenton,N.J. R5 (43)...	6.15
Worcester,Mass. A7 (43)	6.15
Worcester,Mass. T6 (43)	6.50
Worcester,Mass.W12(43)	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.90
Monessen,Pa. P16 (43)..	8.50
Muncie,Ind. I-7 (43) ...	8.70
Roebling,N.J. R5 (43)...	8.80
SparrowsPt.,Md. B2(43)	8.60
Johnstown,Pa. B2 (43)..	8.50

WIRE (16 gage)	An'ld. Stone	Galv. Stone
(Add 4.7% on base and extras)		
Aliquippa J5	10.15	12.15
Bartonville(19)K4	10.25	12.00*
Cleveland A7	10.25	11.55
Crawfrdsville M8	10.25	12.00
Fostoria,O. S1 ..	10.40	13.00
Johnstown B2 ..	10.73	12.58§
Kokomo C16 ..	10.625†	12.325†
Minnequa C10..	10.40	12.425*
Palmer,Mass. W12	10.25	12.15
Pitts.,Cal. C11 ..	10.60	11.90
SparrowsPt. B2..	10.84	12.68§
Waukegan A7	10.25	11.55
Worcester A7	11.85	....

* Based on 14-cent; § 14.50 cent zinc. † Includes 4.7% increase.

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 (43) ..	6.25
Alton,Ill. L1	6.85
Bartonville,Ill. K4	6.64
Buffalo W12 (43)	6.25
Cleveland A7 (43)	6.25
Donora,Pa. A7 (43)	6.25
Duluth,Minn. A7 (43) ..	6.25
Fostoria,O. S1 (43)	6.25
Johnstown,Pa. B2 (43)..	6.25
Millbury(12) N6 (43) ..	8.05
Minnequa,Colo. C10 (43)	6.50
Monessen,Pa. P7 (43) ..	6.25
Monessen,Pa. P16	6.75
Muncie,Ind. I-7 (43) ...	6.45
Palmer,Mass. W12 (43)..	6.55
Pittsburg,Calif. C11(43)	7.20
Roebling,N.J. R5 (43)..	6.55
Portsmouth,O. P12(43)..	6.25
So.Chicago,Ill. R2 (43)..	6.25
So.SanFran. C10 (43) ..	7.20
SparrowsPt.,Md. B2 (43)	6.35
Struthers,O. Y1 (43) ...	6.25
Trenton,N.J. A7 (43) ...	6.55
Waukegan,Ill. A7 (43)..	6.25
Worcester A7, T6 (43)..	6.55
Worcester,Mass. W12(43)	6.55
Worcester,Mass. J4 (43)	6.75

WIRE, Tire Bead

Bartonville,Ill. K4	11.51
Monessen,Pa. P16 (43) ..	11.40
Roebling,N.J. R5 (43)..	11.55

WIRE, Fine & Weaving (8"Coils)

Bartonville,Ill. K4	9.42
Buffalo W12 (43)	8.90
Chicago W13	9.32
Cleveland A7 (43)	8.90
Crawf'sville,Ind. M8(43)	8.90
Fostoria,O. S1 (43)	8.90
Johnstown,Pa. B2 (43)..	8.90
Kokomo,Ind. C16 (43) ..	8.90
Monessen,Pa. P16 (43)..	8.90
Muncie,Ind. I-7 (43) ...	9.10
Palmer,Mass. W12 (43)	9.20
Robling,N.J. R5 (43) ..	9.20
Waukegan,Ill. A7 (43)..	8.90
Worcstr,Mass. A7, T6(43)	9.20

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	144
Aliquippa,Pa. J5	147*
Atlanta A11	149
Bartonville,Ill.(19) K4 ..	146
Crawfordsv.lle,Ind. M8 ..	149
Donora,Pa. A7	142
Duluth,Minn. A7	142
Fairfield,Ala. T2	142
Houston,Tex. S5	150
Johnstown,Pa. B2	147
Joliet,Ill. A7	142
KansasCity,Mo. S5	154
Kokomo,Ind. C16	149
Minnequa,Colo. C10	153*
Monessen,Pa. P7	147
Pittsburg,Calif. C11	162
Rankin,Pa. A7	142
So.Chicago,Ill. R2	144
So.SanFran., Calif. C10.	167*
SparrowsPoint,Md. B2...	149
Sterling,Ill.(1) N15	146

* Based on 14-cent zinc.

WIRE, Upholstery Spring

Aliquippa,Pa. J5	6.275
Alton,Ill. L1	6.50
Buffalo W12	6.275
Cleveland A7	6.275
Donora,Pa. A7	6.275
Duluth,Minn. A7	6.275
Johnstown,Pa. B2	6.275
LosAngeles B3	7.225
Minnequa,Colo. C10	6.525
Monessen,Pa. P7	6.275
Monessen,Pa. P16 (42)..	6.40
NewHaven,Conn. A7	6.575
Palmer,Mass. W12	6.575
Pittsburg,Calif. C11	7.225
Portsmouth,O. P12	6.275
Roebling,N.J. R5	6.575
So.Chicago,Ill. R2	6.275
So.SanFrancisco C10 ..	7.225
SparrowsPoint,Md. B2..	6.375
Torrance,Calif. C11	7.225
Trenton,N.J. A7	6.575
Waukegan,Ill. A7	6.275
Worcester,Mass. A7	6.575

WOVEN FENCE,9-15½ Ga.

	Col.
AlabamaCity,Ala. R2	135
Ala.City,Ala.,17-18ga.R2 .	222
Aliquippa,Pa.9-14½ga.J5	131
Atlanta A11	140
Bartonville,Ill.(19) K4 ..	137
Crawfordsville,Ind. M8 ..	140
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Houston,Tex. S5	141
Johnstown,Pa. B2	138
Johnstown,17ga.,6" B2 ..	229
Joliet,Ill. A7	133
KansasCity,Mo. S5	145
Kokomo,Ind. C16	140
Minnequa,Colo. C10	146*
Monessen,Pa. P7	138
Pittsburg,Calif. C11	156
Rankin,Pa. A7	133
So.Chicago,Ill. R2	135
Sterling,Ill.(1) N15	137

* Based on 14-cent zinc.

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	132
Atlanta A11	135
Bartonville,Ill.(19) K4 ..	132
Crawfordsville,Ind. M8 ..	134
Donora,Pa. A7	132
Duluth,Minn. A7	132
Fairfield,Ala. T2	132
Joliet,Ill. A7	132
KansasCity,Mo. S5	144
Kokomo,Ind. C16	134
Minnequa,Colo. C10	137
Pittsburg,Calif. C11	156
So.Chicago,Ill. R2	132
So.SanFran.,Calif. C10 ..	156
SparrowsPoint,Md. B2 ..	134
Sterling,Ill.(1) N15	132

FENCE POSTS

ChicagoHts.,Ill. C2	145
Duluth,Minn. A7	133
Franklin,Pa. F5	145
Huntington,W.Va. W7 ..	148
Johnstown,Pa. B2	148
Marion,O. P11	140
Minnequa,Colo. C10	138
Moline,Ill. R2	136
So.Chicago,Ill. R2	140
Tonawanda,N.Y. B12 ..	148
Williamsport,Pa. S19 ..	158

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.85
Lebanon,Pa. (31) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh O3, P14	9.85

AXLES

Ind.Harbor,Ind. S13	5.65
Johnstown,Pa. B2	5.65

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2 (44)	118
Aliquippa,Pa. J5 (44) ..	118
Atlanta A11	130
Bartonville,Ill.(19) K4 ..	127
Chicago,Ill. W13 (44) ..	118
Cleveland A9 (44)	125
Crawfordsville,Ind. M8 ..	130
Donora,Pa. A7 (44)	118
Duluth,Minn. A7 (44) ..	118
Fairfield,Ala. T2 (44) ..	118
Galveston,Tex. D7 (44) ..	126
Houston,Tex. S5 (44) ..	126
Johnstown,Pa. B2 (44)..	118
Joliet,Ill. A7 (44)	118
KansasCity,Mo. S5 (44)..	130
Kokomo,Ind. C16	129
Minnequa,Colo. C10 (44)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11 (44)	137
Portsmouth,O. P12	132
Rankin,Pa. A7 (44)	118
So.Chicago,Ill. R2 (44)..	118
SparrowsPoint,Md.B2(44)	120
Sterling,Ill.(1) N15 (44)	118
Torrance,Calif. C11 (44)	138
Worcester,Mass. A7 (44)	124

STAPLES, Polished, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2 (44)	118
Atlanta A11	129
Bartonville,Ill. (19) K4..	126
Chicago W13	127
Crawfordsville,Ind. M8..	128
Donora,Pa. A7 (45)	118
Duluth,Minn. A7 (45)...	118
Fairfield,Ala. T2 (45)....	118
Johnstown,Pa. B2 (45)..	118
Joliet,Ill. A7 (45)	118
Kokomo,Ind. C16	128
Minnequa,Colo. C10 (45)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11 (45)	137
Portsmouth,O. P12	132
Rankin,Pa. A7 (45)	118
SparrowsPoint,Md.B2(45)	120
Sterling,Ill. (1) N15 (45)	118
Torrance,Calif. C11 (45)	138
Worcester,Mass. A7 (45)	124

NAILS, Cut (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A3 ..	$7.80
Wheeling,W.Va. W10 ...	7.80

TIE PLATES

Fairfield,Ala. T2	4.775
Gary,Ind. U5	4.775
Ind.Harbor,Ind. I-2	4.775
Lackawanna,N.Y. B2	4.775
Minnequa,Colo. C10..	$95.50*
Pittsburg,Calif. C11	4.925
Seattle B3	4.925
Steelton,Pa. B2	4.775
Torrance,Calif. C11	4.925

* Per net ton.

JOINT BARS

Bessemer,Pa. U5	4.925
Fairfield,Ala. T2	4.925
Ind.Harbor,Ind. I-2	4.925
Joliet,Ill. U5	4.925
Lackawanna,N.Y. B2..	4.925
Minnequa,Colo. C10	4.925
Steelton,Pa. B2	4.925

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1.	6.65
KansasCity,Mo. S5	6.90
Lebanon,Pa. B2	6.65
Minnequa,Colo. C10	6.65
Pittsburgh J5	6.65
Seattle B3	7.15
So.Chicago,Ill. R2	6.65
Struthers,O. Y1	6.65
Youngstown R2	6.65

RAILS	Std. No. 1	Std. No. 2	All No. 2	Std. Tee Rails 60 lb Under
Bessemer,Pa. U5	3.775	3.675	3.725	4.25
Ensley,Ala. T2	3.775	3.675	...	4.25
Fairfield,Ala. T2	...	...	...	4.25
Gary,Ind. U5	3.775	3.675	3.725	...
Huntington,W.Va. W7	...	...	...	5.25
IndianaHarbor,Ind. I-2 ..	3.775	3.675	3.725	...
Johnstown,Pa. B2	...	...	...(16)	4.25
Lackawanna,N.Y. B2	3.775	3.675	...	4.25
Minnequa,Colo. C10	$75.50*	$73.50*	...	4.75
Steelton,Pa. B2	3.775	3.675	...	...
Williamsport,Pa. S19	...	...	...	5.00

* Per net ton.

TOOL STEEL

(Prices subject to 4.7% increase)

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	Mo	
18	4	1	....		1.505
18	4	2	....		1.65-1.66
20.25	4.25	1.6	12.25	3.535	3.675
19	4	2	7		2.460
18.25	4.25	1	4.75		2.125
18	4	2	9		2.445-2.45
13.5	4	3	....		1.6025
9	3.25	0.5	....		1.01
W	Cr	V	Mo		
6.4	4.5	1.9	5		0.96-0.965
6	4	3	6		1.190
1.5	4	1	8.5		0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga. & heavier.
(15) ⅛" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(31) New Haven Conn., base
(32) Del. San Francisco Bay area.
(33) 20 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.85c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Add $31.50 per ton.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 7.85c for cut lengths.
(35) 24" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter: 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Plus 0.375c per 100 lb.
(43) Plus 4.7% on base and extras.
(44) Plus 45c per 100 lb.
(45) Plus 40c per 100 lb.

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng-HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co,
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
U4 Universal Cyclops Steel
U5 United States Steel Co.
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

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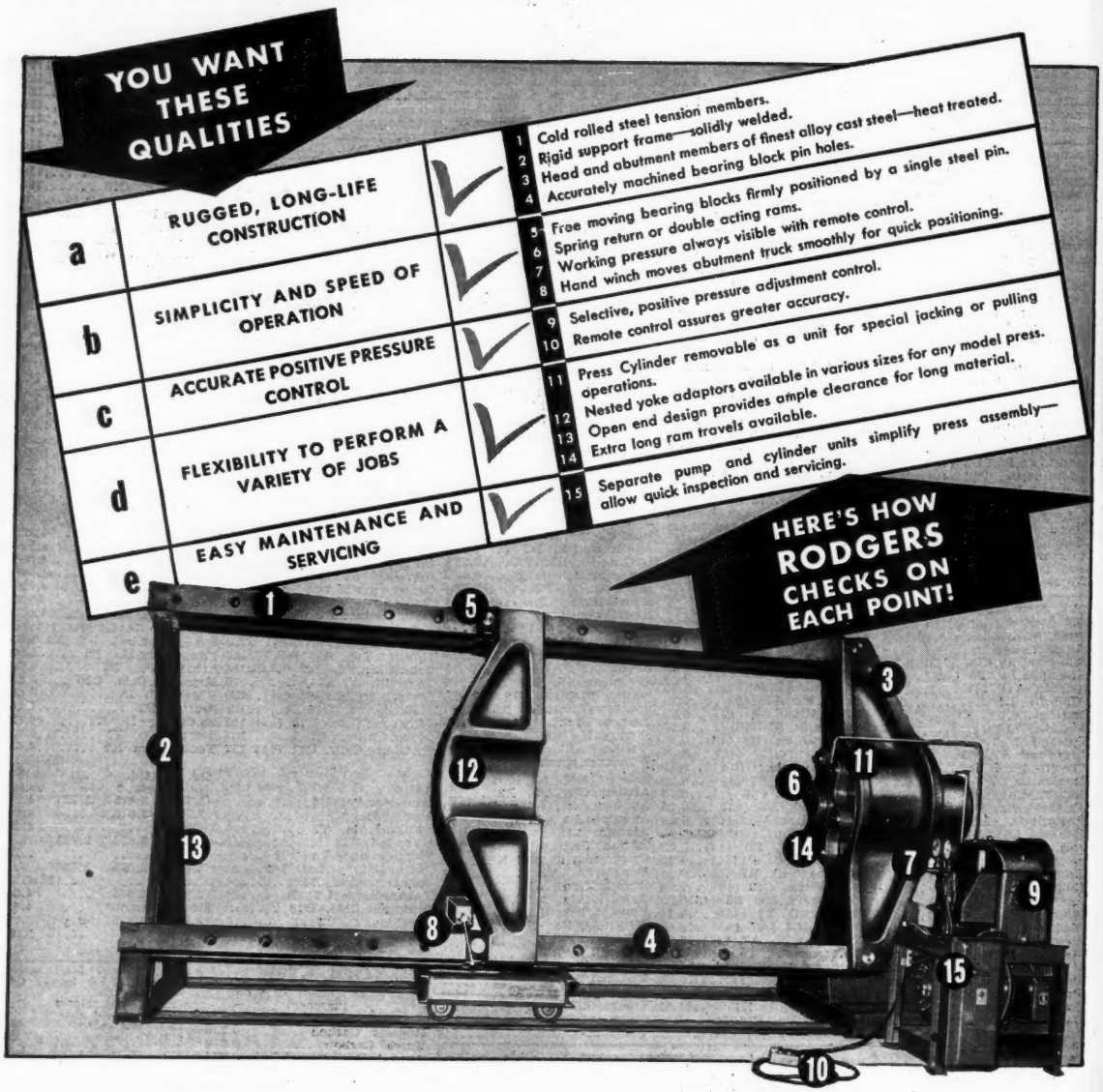
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8 Hand winch moves abutment truck smoothly for quick positioning.
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BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	½		¾		1		1¼		1½		2		2½		3	
List Per Ft	8.5c		11.5c		17c		23c		27.5c		37c		58.5c		76.5c	
Pounds Per Ft	0.85		1.13		1.68		2.28		2.73		3.68		5.82		7.62	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Alton, Ill. L1	29.5	10.5	32.5	14.5	35	18	35.5	18.5	36	19.5	36.5	20	37	20.5	37	20.5
Benwood, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	21.5	39.5	22	40	21.75	40	21.75
Etna, Pa. N2 (†)	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	22.25	39.5	22	40	21.75	40	21.75
Fontana, Calif. K1 (†)	21	1.75	24	5.75	26.5	9.25	27	9	27.5	10	28	10.5	28.5	10.25	28.5	10.25
Ind. Harbor, Ind. Y1 (†)	31.5	14.25	34.5	18.25	37	21.75	37.5	21	38	22	38.5	22.25	39	21.75	39	21.75
Lorain, O, N3 (*)	32.5	22.25	35.5	26.25	38	29.75	38.5	27.25	39	28.25	39.5	28.75	40	26.25	40	26.25
Pittsburgh J5	30.75	....	33.75	....	36.25	....	36.75	....	37.25	....	37.75	....	41.5	....	41.5	....
Sharon, Pa. M6	32.5	14.25	35.5	18.25	38	21.25	38.5	20.50	39	21.00	39.5	21.50	40	20.75	40	20.75
Sparrows Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5	37	19.5	37.5	20	38	19.75	38	19.75
Youngstown R2 (‡)	32.5	15.25	35.5	19.25	38	22.75	38.5	22.00	39	23.00	39.5	23.50	40	22.75	40	22.75
Youngstown Y1 (‡)	32.5	15.25	35.5	19.25	38	22.75	38.5	22.00	39	23.00	39.5	23.50	40	22.75	40	22.75
Wheatland, Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	19	39	19.5	39.5	20	40	20.25	40	20.25

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

Size-Inches	2		2½		3		3½		4		5		6	
List Per Ft.	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft.	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Ambridge, Pa. N2	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Lorain, O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75	20	14.75	33.75	19.5	33.75	19.5
Youngstown Y1 (‡)	24	7.50	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown, R2 (‡)	24	7.50	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		3½		4	
List Per Ft	5.5c		6c		6c		92c		$1.00	
Pounds Per Ft	0.24		0.42		0.57		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Benwood, W. Va. W10	29.5	+0.25	23.25	+3.5	17.75	+7.75	33	14.25	33	14.25
Butler, Pa. F6 (†)	30.5	1.25	25	+1.75	20	+5.5	..	....	..	....
Etna, Pa. N2 (†)	30.5	1.25	25	+1.75	20	+5.5	33	14.25	33	14.25
Sharon, Pa. M6 (‡)	29.5	+0.25	23	+4.25	18	+8.25	..	....	..	....
Sparrows Pt., Md. B2	28.5	+0.75	23	+3.75	18	+7.50	..	....	..	....
Youngstown R2 (‡)	....	....	....	....	....	....	33	15.25	33	15.25
Wheatland, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	..	....	..	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 12.50c; (§), 14.50c; (*), 5c, with discounts adjusted depending on price of zinc at time of shipment.

CLAD STEELS

(Cents per pound; add 4.7% to base price and extras)

Cladding	Plates		Sheets		
	Carbon Base		Carbon Base		Copper Base
Stainless	10%	20%	10%	20%	Both Sides
302	....	....	19.75	26.24-27.50	77.00
304	25.00	29.50	24.50	27.50-27.77	77.00
309	30.50	35.00	....	....	....
310	36.50	41.00	....	....	144.00
316	29.50	34.00	26.00	35.92-36.50	....
317	34.50	39.00	....	....	....
318	33.50	38.00	....	....	....
321	26.50	31.00-32.00	23.00	33.00	111.00
347	27.50	32.00	24.00	33.50-33.83	130.00
405	21.25	27.75	....	....	....
410	20.75	27.25	....	....	....
Nickel	33.55	45.15	....	....	....
Inconel	41.23	54.18	....	....	165.00
Monel	34.93	46.28	....	....	....
Copper*	....	....	....	44.00	....

	Strip			
	Carbon Base			
	Cold-Rolled		Hot-Rolled	
	10%	Both Sides	10%	Both Sides
Nickel	41.00	54.00	....	....
Copper*	23.70	26.65	20.20	26.40

* Deoxidized. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa, A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa. S18; Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:

	Reg.	Hvy.
½-in. & smaller diam.	15	
⅝-in. & ¾-in.	18.5	
⅞-in. and larger	17.5	
Longer than 6 in.:		
All diams.	14	
Lag bolts, all diams.:		
6 in. and shorter	23	
over 6 in. long	21	
Ribbed Necked Carriage	18.5	
Blank	34	
Plow	34	
Step, Elevator, Tap and Sleigh Shoe	21	
Tire bolts	31	
Boiler & Fitting-Up Bolts	31	

NUTS

	Reg.	Hvy.
H.P. & C.P. Square:		
½-in. & smaller	15	15
⅝-in. & ¾-in.	12	6.5
⅞-in.-1 1/16-in.	9	1
1⅛-in. & larger	7.5	1
H.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ¾-in.	16.5	6.5
⅞-in.-1 1/16-in.	12	2
1⅛-in. & larger	8.5	3
C.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ¾-in.	23	17.5
⅞-in. & 1⅛-in.	19.5	12
1⅛-in. & larger	12	6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller	35	28.5
⅝-in. & ¾-in.	29.5	22
⅞-in.-1 1/16-in.	24	15
1⅛-in. & larger	13	8.5
		Light
¼-in. & smaller		35
5/16-in. to ⅜-in.		28.5
⅞-in. to 1 1/16-in.		26

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	33
1 in. and smaller diam. x over 6 in.	26

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	35
¼-in. diam. & larger	16
N.F. thread, all diams.	10

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	48 & 10
Plated finishes	31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged: per cent off list)

6 in. or shorter:	
⅝-in. & smaller	42
¾-in. through 1 in.	34
Longer than 6 in.:	
⅝-in. & smaller	26
¾-in. through 1 in.	4

METALLURGICAL COKE

Price net ton

BEEHIVE OVENS

Connellsvll.fur.	$14.50-15.00
Connellsvll.fdy.	16.50-17.50
New River foundry	20.80
Wise county, foundry	15.95
Wise county, furnace	15.20

OVEN FOUNDRY COKE

Kearney, N. J. ovens.	$22.75
Everett, Mass., ovens New England, del.	*24.80
Chicago ovens	23.00
Chicago, del.	24.50
Terre Haute, ovens	22.50
Milwaukee, ovens	23.75
Indianapolis, ovens	22.75
Chicago, del.	26.62
Cincinnati, del.	25.85
Ironton, O., ovens	22.50
Cincinnati, del.	25.12
Painesville, O., ovens. Cleveland, del.	24.00 25.82
Erie, Pa., ovens	23.50
Birmingham, ovens	20.30
Cincinnati, del.	25.23
LoneStar,Tex., ovens	18.50
Philadelphia, ovens	22.70
NevilleIsland,Pa.,ovens	23.00
Swedeland, Pa., ovens.	22.60
St. Louis, ovens St. Louis, del.	25.40
Portsmouth, O., ovens Cincinnati, del.	22.50 25.12
Detroit, ovens Detroit, del.	24.00 25.00
Buffalo, del.	26.58
Flint, del.	26.73
Pontiac, del.	25.56
Saginaw, del.	27.08

*Or within $4.55 freight zone from works.

NOTE: Current prices on boiler tubes, coal chemicals, fluorspar, electrodes and rivets appeared on page 191, Nov. 10 issue.

STAINLESS STEEL

(Add 4.7% on base price and extras)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	41.00	34.00	31.25
302	41.25	36.75	31.50
303	43.25	40.25	34.00
304	43.25	38.75	33.00
309	56.00	55.00	44.75
316	57.00	59.00	49.25
321	49.25	48.25	37.00
347	53.75	52.25	41.50
410	36.50	30.50	25.75
416	37.00	37.00	26.25
420	44.00	47.00	31.25
430	39.00	31.00	26.25
501	27.50	26.00	14.25
502	28.50	27.00	15.25

Balt., Types 301-347 and 430 sheets, except 303 and 309 E2.

Brackenridge, Pa. sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Massillon, O., all items, R3.

McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa., bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire I-7 quotes types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.

Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.

Waukegan, bars & wire A7.

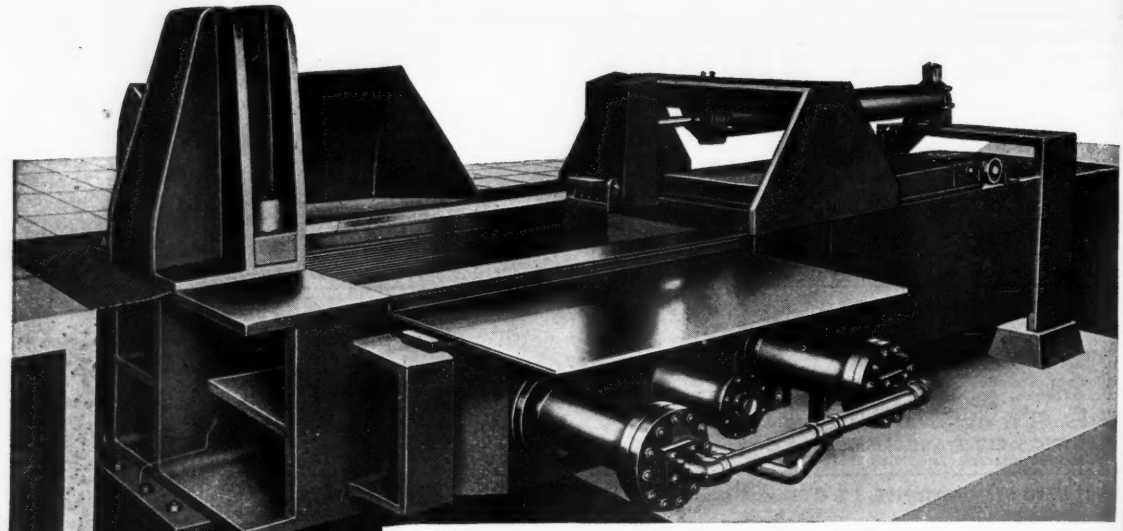
West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.

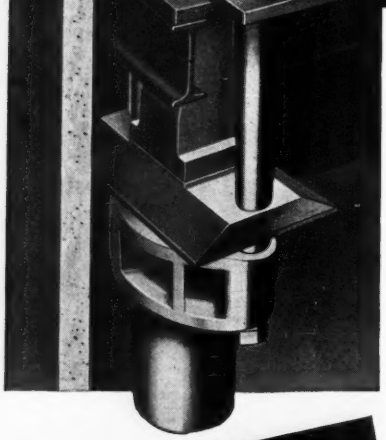
Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301 C8.

METAL POWDERS

(Per pound, f.o.b shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+% Fe, annealed	13.00
Unannealed	14.50
Swedish, c.l.f. New York, in bags	8.85-9.95
Electrolytic iron:	
Annealed, 99.5% Fe	42.50
Unannealed (99 + % Fe)	36.50
Unannealed, 99 + % Fe (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	33.00
Antimony, 500 lb lots.	71.00
Brass, 20-ton lots.	28.25-32.00
Bronze, 10-ton lots	51.25-60.00
Phosphor-Copper, 20-ton lots	50.00
Copper:	
Electrolytic	27.25
Reduced	24.75
Lead	22.50
Magnesium	75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	86.00
Nickel-Silver 5-ton lots	44.50
Silicon	38.50
Solder (plus cost of metal)	8.50
Stainless Steel, 302	83.00
Zinc, 10-ton lots	20.00-23.00
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	5.85
Less than 1000 lb	6.00
Molybdenum:	
99.9%, minus 200 mesh	3.24
Chromium, electrolytic 99% Cr min.	3.50





Help Keep the SCRAP CYCLE *in HIGH GEAR for Top Level Steel Production*

The "heart" of your sheet-steel salvaging program is your baling equipment. It should be adequate to handle your daily accumulation of sheet steel scrap efficiently at low cost-per-ton. Then you can show a profit on your salvaging operations while contributing your share to the rapidly expanding production of new steel in the years ahead.

Large G-H Balers, properly designed and ruggedly constructed, hold to a minimum the cost-per-ton of baled sheet steel scrap. Galland-Henning engineers, with a background of many years' experience in this field, offer you competent counsel on your scrap baling operations. Consult them NOW regarding modernization or expansion of your baling facilities to meet future needs.

Typical views of G-H Baler operations in large metal-working plants.

GALLAND-HENNING MFG. CO.
2747 South 31st St. • Milwaukee 46, Wis.

GALLAND-HENNING

SCRAP METAL BALING PRESSES

A 5921-1P

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140†‡		Carbon	Floor
New York (city)	6.56	7.57	8.77	6.86	...	6.89	7.83‡	11.34	6.69	6.90	8.31
JerseyCity(c'try)	6.35	7.27	8.47	6.75	...	6.59	7.53	9.54	6.39	6.60	8.01
Boston (city) ..	6.71	7.56	8.79	6.75	...	6.62	7.69‡	10.80‡	6.76	6.95	8.18
Boston (c'try)..	6.51	7.36	8.59	6.55	...	6.42	7.49‡	10.60‡	6.56	6.75	7.98
Phila. (city) ...	6.36	7.38	8.60	6.70	8.55	6.67	7.70‡	11.04	6.42	6.49	7.62
Phila. (c'try) ..	6.11	7.13	8.35	6.45	8.30	6.42	7.45‡	10.79	6.17	6.24	7.36
Balt. (city) ...	6.01	7.37	8.62	6.62	...	6.61	7.62‡	11.37	6.67	6.67	7.90
Balt. (c'try) ..	5.81	7.17	8.42	6.42	...	6.41	7.42‡	11.17	6.47	6.47	7.70
Norfolk, Va. ..	7.60	...	...	...	...	6.44	8.45	...	7.25	6.64	7.33
Richmond, Va. .	6.14	6.95	8.68	6.53	...	6.30	7.38	...	6.58	6.68	7.80
Wash. (w'hse) .	6.31	7.61	8.90	6.89	...	6.90	7.78	...	6.93	6.95	8.17
Buffalo (del.)..	6.00	6.85	8.66	6.41	...	6.10	7.15‡	11.27	6.28	6.50	7.87
Buffalo (w'hse)	5.80	6.65	8.46	6.21	...	5.90	6.95‡	11.07	6.08	6.30	7.67
Pitts. (w'hse)..	5.80	6.65	8.05	5.94	...	5.83	6.90‡	10.65	5.95	5.95	7.18
Detroit (w'hse).	6.07	6.92	8.69	6.13	7.70-8.03	6.12	7.10‡	10.92	6.42	6.47	7.52
Cleveland (del.)	6.00	6.85	8.39	6.20	...	6.09	7.10‡	10.99	6.48	6.32	7.71
Cleve. (w'hse) .	5.80	6.65	8.19	6.00	...	5.89	6.90‡	10.79	6.28	6.12	7.51
Cincin. (city) ..	6.28	6.87	8.67	6.29	...	6.28	7.31‡	11.22	6.57	6.62	7.75
Chicago (city)..	6.00	6.85	8.25	6.03	...	6.03	7.00‡	10.85	6.15	6.15	7.38
Chicago (w'hse)	5.80	6.65	8.05	5.83	...	5.83	6.80‡	10.65	5.95	5.95	7.18
Milwau. (city) .	6.17	7.02	8.42	6.20	...	6.20	7.27‡	11.02	6.32	6.32	7.55
Milwau. (c'try).	5.97	6.82	8.22	6.00	...	6.00	7.07‡	10.82	6.12	6.12	7.35
St. Louis (del.)	6.30	7.14	8.55	6.34	...	6.33	7.40‡	11.15	6.55	6.55	7.78
St. L (w'hse) .	6.10	6.94	8.35	6.14	...	6.13	7.20‡	10.95	6.35	6.35	7.58
Birm'hm (city).	5.95	6.80	7.85[3]	5.95	...	5.95	8.40	...	6.10	6.25	8.65
Birm'hm(w'hse)	5.80	6.65	7.70[2]	5.80	...	5.80	8.40	...	5.95	6.10	8.65
Los Ang. (city)	6.80	8.65	9.95	6.95	11.40	6.80	8.81‡	12.25	6.80	6.86	9.67
L. A. (w'hse)..	6.60	8.45	9.75	6.75	11.20	6.60	8.61‡	12.05	6.60	6.66	9.47
Seattle-Tacoma.	7.36	8.23	10.00	7.39	...	7.44	9.62‡	10.90§	6.95	7.19	9.12
SanFran.(w'hse)	6.90	8.20	9.60	6.75	...	6.65	8.65‡	12.05	6.50	6.75	8.90

*Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 25-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [4]—1000 to 1999 lb.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural), lower lake ports.
Old range bessemer $9.45
Old range nonbessemer 9.30
Mesabi bessemer 9.20
Mesabi nonbessemer 9.05
High phosphorus 9.05

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 1, 1950, in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Eastern Local Iron Ore

Cents per unit del., E. Pa.
Foundry and basic 56-62% concentrates contract 17.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports
Swedish basic, 60 to 68%:
Spot ..... nom.
Long-term contract 24.00
North African hematities (spot) .. 26.00-28.00
Brazilian iron ore, 67-69% (spot)..... 32.00

Tungsten Ore

Net ton unit, duty paid
Foreign wolframite and scheelite, per net ton unit $65.00
Domestic scheelite, mines 65.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 85c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1 ..... $39.00-42.00
48% 3:1 ..... 44.00-45.00
48% no ratio 30.00-32.00

South African Transvaal

44% no ratio $27.00-28.00
48% no ratio 34.00-35.00

Brazilian

44% 25:1 lump ..... nom.

Domestic
(Rail nearest seller)

48% 3:1 ..... $39.00

Molybdenum

Sulphide concentrates per lb, molybdenum content, mines $1.00

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, [illegible] packed 22.65c, ton lot 23.80c, less ton 25.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr. 67-72%) Contract, carload, lump, bulk, max. 0.03% C [illegible] packed Cr. 0.06% C 31.50c. 0.06% C 30.50c, 0.10% C 30.00c, 0.15% C 29.75c, 0.20% C 29.50c, 0.50% C 29.25c, 1% C 29.00c, 1.50% C 28.85c, 2% C 28.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-[illegible] max D, bulk, 23.25c per lb of contained Cr. C.l., packed 24.15c, ton 25.50c, less ton 27.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8 M x D, 16.35c per lb of alloy; ton lot 17.2c; less ton lot, 18.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 21.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 21.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 21.75c per lb of contained silicon plus 12.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) Contract carload, 1" x D; packed, max 0.50% C grade, $1.08 per lb of contained chromium ton lot $1.10, less ton $1.12. Delivered. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si; packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload [illegible] packed 18.2c, ton lot 19.1c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: Min 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 200 to 1999 lb 11.65c, smaller lots 12.15c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-[illegible] max C 3-3.5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primes and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.30.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

TUNGSTEN ALLOYS*

Ferrotungsten: (70-80%). 10,000 lb W or more, $4.85 per lb of contained W; 2000 lb W to 10,000 lb W, $4.95; less than 2000 lb W, $5.07, f.o.b. Niagara Falls, N. Y.

* Government ceiling prices, effective May 7, 1951, f.o.b. Niagara Falls, N. Y., basis.

NOTE: Current prices on manganese, titanium and "other ferroalloys" appeared on page 193 Nov. 10 issue; calcium, zirconium, briquetted alloys and refractories, page 177, Nov. 3.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

Nov. 13	$43.00
Nov. 6	43.00
Oct., 1952	43.00
Nov., 1951	43.00
Nov., 1947	40.42

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Basing Point	No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grades

2. No. 1 Busheling	Base
3. No. 1 Heavy Melting	—$1.00
4. No. 2 Heavy Melting	— 1.00
5. No. 2 Bundles	— 1.00
6. Machine Shop Turnings	—10.00
7. Mixed Borings and Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate:	
16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base
Foundry, Steel:	
20. 2 feet and under	Base
21. 1 foot and under	+ 2.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00
25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00
31. Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	— 6.00
33. No. 2 Bundles	— 9.00
34. Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the base of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purposes.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel and uncut wheelcenters	— 6.00
9. Uncut Frogs, Switches	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or/steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
Bolsters & Side Frames:	
22. Uncut	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3, oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00
31. Fireboxes	— 8.00
32. Boilers	— 6.00
33. No. 2 Sheet Scrap	—13.00
34. Carsides, Doors, Car Ends, cut apart	— 6.00
35. Unassorted Iron & Steel	— 6.00
36. Unprepared scrap, not suitable for hydraulic compression	— 8.00

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.
(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.
(3) For crushingñ Grade No. 6, $3. For preparing into:
(4) Grade No. 25, $6.
(5) Grade No. 19, $6.
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.
(7) Grade No. 17 or No. 21, $11.
(8) Grade No. 18, $12.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6. For preparing into:
(3) Grade No. 16, $4.
(4) Grade No. 17, $5.
(5) Grade No. 18, $7.
(6) Grade No. 21, $4.
(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into Grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 11, $7.
(3) For preparing Grade No. 3 into Grade No. 1, $4.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:

1. No. 1 (Cupola)	$49.00
2. No. 2 (Charging Box)	47.00
3. No. 3 (Hvy. Breakable)	45.00
4. No. 4 (Burnt Cast)	41.00
5. Cast Iron Brake Shoes	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop broken machinery	52.00

OPEN MARKET

(Delivered prices include broker's commission.)

Birmingham
(Delivered)

Shoveling turnings	$30.00-32.00
Cast iron borings	30.00-32.00
No. 1 cupola cast	47.00-48.00
Stove plate	42.00
Charging box cast	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	41.00
Heavy breakable	36.00
Stove plate	34.00-35.00
Unstripped motor blocks	30.00

Buffalo
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 1 busheling	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Cast iron borings	38.00
Short shoveling turnings	38.00
No. 1 cupola cast	45.50-46.50
No. 1 machinery cast	49.00-50.00

Chicago
(Delivered)

No. 2 heavy melting	42.50
No. 2 bundles	42.50
Machine shop turnings	33.50
Mixed borings, turnings	35.00-37.50
Shoveling turnings	37.50
Cast iron borings	35.00-37.50
No. 1 cupola cast	44.00-46.00
Charging box cast	42.00-44.00
Heavy breakable	41.00-43.00
Burnt cast	37.00-39.00
Cast iron brake shoes	39.00-41.00
Stove plate	42.00-44.00
Clean auto cast	47.00-49.00
Unstripped motor blocks	35.00-37.00
Malleable	49.00-51.00
Drop broken machinery	48.00-50.00

Cleveland
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Shoveling turnings	38.00
Cast iron borings	38.00
(F.o.b. shipping point)	
No. 1 cupola	49.00
Charging box cast	47.00
Burnt cast	41.00
Stove plate	46.00
Clean auto cast	52.00
Unstripped motor blocks	43.00
Malleable	55.00
Drop broken machinery	52.00

Detroit
(F.o.b. shipping point)

No. 1 cupola cast	47.00-48.00
Heavy breakable	43.00-44.00
Clean auto cast	49.00-50.00
Unstripped motor blocks	40.00-41.00
Drop broken machinery	50.00-52.00
Charging box cast	44.00-45.00

† Nominal.

Los Angeles
(Delivered)

No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	35.00
No. 2 bundles	29.00
No. 1 cupola cast	49.00
Machine shop turnings	14.00

New York
(Brokers' buying prices)

No. 2 heavy melting	35.99
Mixed borings, turnings	29.99
Machine shop turnings	25.99
Cupola cast	42.00-43.00
Unstripped motor blocks	36.00-37.00

Philadelphia

No. 1 heavy melting	41.50†
No. 2 heavy melting	41.50†
No. 1 bundles	42.50†
No. 2 bundles	41.50†
No. 1 busheling	42.50†
Mixed borings, turnings	36.50†
Machine shop turnings	32.50†
Short shoveling turnings	36.50†
No. 1 cupola cast	48.00-50.00††
Unstripped motor blocks	42.00‡
Heavy breakable	45.00†
Machinery cast	52.00†
Charging box cast	47.00†

†Ceiling price. ‡Nominal.
§Shipping point. ††Delivered.

Pittsburgh
(Delivered)

No. 2 heavy melting	44.00†
No. 1 bundles	45.00†
No. 2 bundles	44.00†
Machine shop turnings	35.00†
Shovel turnings	39.00†
No. 1 cupola cast	48.50
Heavy breakable	45.00

†Ceiling price.

San Francisco
(Delivered)

No. 2 heavy melting	31.00
Machine shop turnings	14.00
No. 2 bundles	29.00
No. 1 cupola cast	44.00

Seattle
(F.o.b. shipping point)

No. 1 bundles	30.00
No. 1 cupola cast	41.00
Heavy breakable	36.00-38.00
Unstripped motor blocks	31.00

St. Louis
(Delivered)

No. 1 cupola	48.00
Unstripped motor blocks	38.00

Youngstown
(Delivered)

No. 2 heavy melting	43.00
No. 2 bundles	43.00
Machine shop turnings	34.00

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt	$35.50
No. 1 Bundles	35.50
No. 2 Bundles	35.50
Mechanical Bundles	32.00
Mixed Steel Scrap	31.50
Mixed Borings, Turnings	32.50
Rails, Remelting	35.50
Rails, Rerolling	44.80
Busheling	30.00
Busheling new factory:	
Prep'd	33.50
Unprep'd	31.50
Short Steel Turnings	32.50
Cast Iron Grades†	
No. 1 Machinery Cast	50.00

†F.o.b., shipping point.

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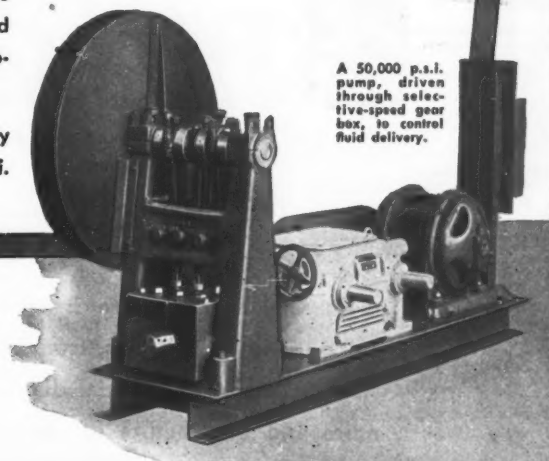

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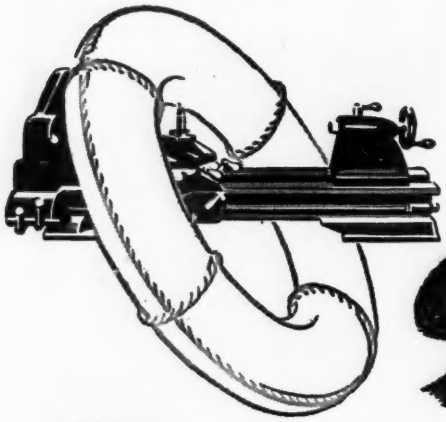

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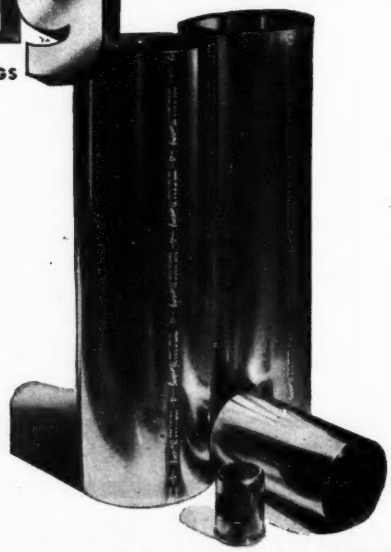

THE BUNTING BRASS & BRONZE COMPANY • TOLEDO 1, OHIO • BRANCHES IN PRINCIPAL CITIES

The Metal Market

Self-Unloader Speeds Bauxite Handling

Maiden voyage of self-unloading bauxite carrier *Carl Schmedeman* was to Mobile, Ala., where the ship is seen, above. Built for Reynolds Metals Co., Richmond, Va., the freighter holds 13,000 tons of aluminum ore from Reynolds' mines in Jamaica. Unloading requires only eight hours. A built-in conveyor moves ore to the stern, where it is carried onto a dockside belt, to a hopper and into railroad cars

Metals Outlook: Copper will continue tight in December, aluminum situation is worsening, lead and zinc markets are regaining strength

AMERICAN INDUSTRY is producing at a higher rate than ever before, yet it could raise that enormous output with the necessary materials.

Controls over distribution, use and inventory will go by the boards in the first half of the year surely. But comforting thoughts don't do fabricators any good today. They keep on chewing up all the metals they get and ask for more.

More Rope—One control newly effected but long overdue in industry's mind concerns inventory restrictions. It permits users of controlled materials to switch to class by class method of accounting for their inventories, rather than use the item by item system previously in effect. Aluminum mill products are grouped into five categories. Ten categories were established for wire mill, brass mill and foundry products. At the user's option, the class method may be adopted for all or part of his inventories.

Copper users will get about the same allocations in December as in November, but whether they'll receive their full quota of metal is problematical. A lift to worried American and European copper users came when striking workers at four Northern Rhodesia mines returned to their jobs, pending outcome of settlement talks. The mines, accounting for about 1000 tons of copper daily, were down for three weeks. Word from Chile that the new government won't nationalize the nation's copper mines caused easier breathing in the copper trade too.

Pressure Points—Aluminum situation is worsening again. Indian summer this year has been exceptionally beautiful—and exceptionally dry. Because of resultant power shortages, aluminum producers are losing 20,000 tons of metal monthly, one-fourth of the industry's capacity. On top of that is the 30,000 tons lost when the steel strike delayed expansions. By year-end, producers expect an order backlog of 75,000 tons, so fabricators can count on a 4 to 6 week delay in shipments.

Sheet users can be particularly apprehensive about the near-term outlook. DPA says it received several proposals from companies wanting to expand their sheet facilities, but this is long-range planning. Lack of raw aluminum causes the sheet storage.

To meet the latest crisis, producers recommend: The government should try to line up more metal from Canada, in addition to the 38,500 tons obtained recently, put off stockpiling until perhaps the third quarter of next year, and pull some metal out of the stockpile to help tide fabricators over and to keep pipelines of supply from going dry. In the face of all this, the aluminum industry still sets the beginning of the second quarter as a time there'll be ample supply.

Recovery—Lead and zinc markets are regaining health quickly. Lead moved up 50 points to a basis of 14.50 cents, New York. Demand perked up considerably but producers are limiting daily sales to intake.

Zinc is following the path to recovery too, may even become temporarily short again in several months because of the wholesale mine shutdowns. Galvanizers, die casters and other users reportedly are getting their inventories down closer to normal or below and are ready to start ordering.

For Sale: Magnesium

Magnesium suppliers have plenty of metal to offer industry (see p. 60). Deliveries of most rolled and drawn products can be made quickly; forging and casting supplies are loose too. Price of commercial hot-rolled magnesium alloy plate 3/16 inch and heavier was cut 20 per cent by Brooks & Perkins Inc., Detroit, to 50 cents a pound. New price makes the metal competitive with aluminum alloy plate on a square foot basis.

Aluminum Output Gains

Third-quarter aluminum production topped the second by 2.2 per cent and third quarter 1951 by 11.3 per cent, despite a September turnout slump of more than 8000 tons to a total of 76,882 tons.

Cut in primary output didn't show up in figures on shipments of fabricated products during the month. Sheet and plate shipments were up 1674 tons in the month to 47,221 tons, while quarterly totals were slightly above previous quarter and year-ago periods. Foil held about on a par with the previous quarter but was well below year-ago totals. Castings improved in September, while quarterly totals showed improvement from both second quarter of 1952 and third quarter of 1951.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c, 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 12.50c; brass special 12.75c; intermediate 13.00c, East St. Louis; high grade 13.85c, delivered.

Lead: Common 14.30c; chemical 14.40c; corroding, 14.40c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.00c, pigs 19.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.80c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 56.50c; 25-lb pigs, 59.15c; "XX" nickel shot, 60.15c; "F" nickel shot or ingots, for addition to cast iron, 56.50c. Prices include import duty.

Mercury: Open market, spot, New York, $200-$205, nominal, per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.00 del; special or patented shapes $2.15.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 83.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $175-$185 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 45.52; yellow brass 40.17; commercial bronze, 95% 45.15; 90% 44.38; red brass, 85% 43.10; 80% 42.34; best quality, 41.35; nickel silver, 18%, 55.08; phosphor-bronze grade A, 5%, 64.71.

Rod: Copper, hot-rolled 41.37; cold-drawn 42.62; yellow brass free cutting, 33.85; commercial bronze 95% 44.84; 90% 44.07; red brass 85%, 42.79; 80%, 42.03.

Seamless Tubing: Copper 45.56; yellow brass 43.18; commercial bronze, 90%, 47.04; red brass, 85%, 46.01.

Wire: Yellow brass 40.46; commercial bronze, 95%, 45.44; 90%, 44.67; red brass, 85%, 43.39; 80%, 42.63; best quality brass, 41.64.

(Base prices, effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb. lots, 32.795; 30,000 lb lots, 32.92; l.c.l., 33.42. Weatherproof, 100,000 lb, 33.60; 30,000 lb, 33.85; l.c.l., 34.35. Magnet wire del., 15,000 lb or more, 38.75; l.c.l., 39.50.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Aug. 4, 1952.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	31.6	...	...
0.135-0.096	12-48	32.1	...	...
0.095-0.077	12-48	32.8	30.6	34.9
0.076-0.061	12-48	33.4	30.8	35.1
0.060-0.048	12-48	33.7	31.0	35.4
0.047-0.038	12-48	34.1	31.3	35.7
0.037-0.030	12-48	34.5	31.7	36.3
0.029-0.024	12-48	35.1	32.0	36.8
0.023-0.019	12-36	35.7	32.7	37.5
0.018-0.017	12-36	36.4	33.3	38.4
0.016-0.015	12-36	37.3	34.0	39.5
0.014	12-24	38.3	35.0	40.8
0.013-0.012	12-24	39.3	35.7	41.7
0.011	12-24	40.3	36.8	43.3
0.010-0.0095	12-24	41.4	37.9	44.8
0.009-0.0085	12-24	42.6	39.1	46.6
0.008-0.0075	12-24	44.0	40.3	48.4
0.007	12-18	45.5	41.7	50.6
0.006	12-18	47.0	43.1	55.4

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— R-317-T4	17S-T4	——Hexagonal—— R-317-T4	17S-T4
0.125	54.6	....	....	....
0.156-0.0188	46.2	....	....	....
0.219-0.313	43.6	....	....	....
0.375	42.0	48.3	....	50.4
0.406	42.0	....	....	....
0.438	42.0	48.3	....	50.4
0.469	42.0	....	....	....
0.500	42.0	48.3	....	50.4
0.531	42.0	....	....	....
0.563	42.0	....	....	47.3
0.594	42.0	....	....	....
0.625	42.0	45.7	....	47.3
0.688	42.0	....	....	47.3
0.750-1.000	41.0	43.1	....	44.6
1.063	41.0	....	....	43.1
1.125-1.500	39.4	41.5	....	43.1
1.563	38.9	....	....	....
1.625	38.3	....	....	41.5
1.688-2.000	38.3	....	....	....

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $19.50 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $19.50 per cwt. Traps and bends: List prices plus 43%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 21.75c; over 12-in., 21.75-22.25c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 77.00c. Strip, cold-rolled, 83.00c. Rods and shapes, 73.00c. Plates, 75.00c. Seamless tubes, 106.00c.

MONEL

(Base prices f.o.b. mill)

Sheets, cold-rolled 60.50c. Strip, cold-rolled 63.50c. Rods and shapes, 58.50c. Plates, 59.50c. Seamless tubes, 93.50c. Shot and blocks, 53.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

DAILY PRICE RECORD

1952	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Nov. 12-13	24.50	14.30	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 11	24.50	14.00	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 3-10	24.50	13.80	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 1	24.50	13.30	12.50	121.50	20.00	39.00	56.50	83.25
Oct. 23-31	24.50	13.30	12.50	121.50	20.00	39.00	56.50	83.25
Oct. 22	24.50	13.30	13.50	121.50	20.00	39.00	56.50	83.25
Oct. 14-21	24.50	13.80	13.50	121.50	20.00	39.00	56.50	83.25
Oct. 8-13	24.50	14.80	13.50	121.50	20.00	39.00	56.50	83.25
Oct. 7	24.50	14.80	13.50–14.00	121.50	20.00	39.00	56.50	83.25
Oct. 1-6	24.50	15.80	13.50–14.00	121.50	20.00	39.00	56.50	83.25
Oct. Avg.	24.50	14.226	13.259	121.50	20.00	39.00	56.50	83.25
Sept. Avg.	24.50	15.80	13.99	121.50	20.00	39.00	56.50	83.25
Aug. Avg.	24.50	15.80	14.067	121.50	19.923	39.00	56.50	83.25
July Avg.	24.50	15.80	15.00	121.50	19.00	39.00	56.50	82.885
June Avg.	24.50	15.06	15.74	121.50	19.00	39.00	56.50	82.75
Nov. 1951 Avg.	24.50	18.80	19.50	103.00	19.00	44.56	56.50	88.00
Nov. 1947 Avg.	21.50	14.825	10.50	80.00	15.00	33.00	35.00	74.625

NOTE: Copper: Electrolytic, del, Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb 75.50c; 3000 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 300 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, 98.5c; 100 lb kegs 99.5c. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point, effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	10.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group 1: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material.

Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free, 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50. Mixed plant scrap: Copper-free solids, 10.00; dural type, 9.00. Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy 10.75-11.25; battery plates 5.75-6.00; linotype and stereotype 12.50-13.00; electrotype 10.75-11.00; mixed babbitt 13.75-14.00.

Zinc: Old zinc, 5.50-6.00; new die cast scrap, 5.50-6.00; old die cast scrap, 4.00-4.50.

Semifinished Steel . . .

Semifinished Prices, Page 173

Pittsburgh — Jones & Laughlin Steel Corp. last week temporarily closed down its Soho openhearths. These furnaces have been producing about 15,000 tons monthly. Two factors for the closing are increased production of the company's new No. 4 openhearth shop at the Pittsburgh Works, and the unavailability of new finishing facilities under construction. The six Soho furnaces, each of 65-ton per heat capacity, will be held in reserve.

Birmingham, Ala.—Tennessee Coal & Iron Division, U. S. Steel Co., established new all-time production records at both blast furnaces and openhearths in October. During the month 7727 tons more iron and 6985 tons more steel were poured than in any other previous month in the company's history.

San Francisco — Pittsburg, Calif., plant of Columbia-Geneva Steel Division, U.S. Steel Co., produced 39,567 net tons of steel in October, shattering all previous monthly records. The best previous mark was 36,181 net tons in August.

Sheets, Strip . . .

Sheet and Strip Prices, Page 173 & 174

Chicago—While users are not able to get from mills all the hot and cold-rolled sheets they need, they aren't doing too badly in getting fill-in tonnage from warehouses. Strip, on the other hand, is freely available. General feeling is sheets will loosen up considerably in first quarter under high level output and easing demand. So far, however, there is no indication demand will be less. Right now, virtually every industry sees good business ahead for at least nine months.

Boston—Orders for carbon and alloy cold-rolled narrow strip are more active, but there are openings in first quarter schedules and the fourth quarter carryover will be smaller. Producers in numerous cases have wiped out over-due shipments, or will be current during early first quarter. All consumers have not yet received allotments for strip and sheets for the period. In many instances they are larger. Temporarily, some sheet users are short of inventory, notably heavier gages.

New York—District sheet sellers say that up to now they have seen no effects of the proposed increase in first quarter quotas. No additional tickets for first quarter have been submitted to them. And, some say, they would not know what to do with them if they were submitted as they regard themselves as already well booked for first quarter.

Philadelphia—District sheet sellers report demand from manufacturers of consumer durables is the best since last spring. Manufacturers of stoves, bathtubs, sinks, radios, television sets and refrigeration units are active.

Pittsburgh—Demand for steel sheet and strip is firm, but delivery promises are qualified for coming weeks. Tight supply conditions are expected through first quarter, but the possibility more sheet and strip will be available is not discounted by producers in the area. Decontrol is expected to bring a more normal perspective to the supply picture.

Cleveland — Extent to which sheet mills will be able to allot additional tonnage to civilian goods manufacturers for first quarter is uncertain. Although government control authorities have authorized supplemental allotments for the period, including 100,000 tons of hot-rolled sheets, 400,000 tons of cold-rolled sheets, 50,000 tons of galvanized sheets and 50,000 tons of cold-rolled strip, it is not clear just where these additional tonnages are to come from.

St. Louis—Sheet demand continues strong. Cold rolled deliveries are 16 weeks behind and roofing sheets 10 weeks late.

San Francisco—The tight situation existing in sheets in this area is expected to continue well into 1953.

Wire . . .

Wire Prices, Page 175

Boston — Demand for upholstery spring wire and heading wire is heavier. Carryovers into first quarter will be smaller than previously indicated. Screw manufacturers are booking more orders and wire users supplying the automotive industry are pressing for delivery. Defense volume is well under the set-aside of 16 per cent. First quarter schedules are filling, but there are openings on many products in finer sizes.

Boston—Supplemental first quarter allotments total 180,000 tons. Largest share goes to general industrial equipment, 70,000 tons. For consumer durable goods supplemental allotments are 36,000 tons and for motor vehicles 30,350 tons. These increases are on cold-drawn wire. Metalworking equipment gets a supplemental allotment of 12,000 tons.

Los Angeles — Bethlehem Pacific Coast Steel Corp. is accepting orders for low-carbon wire for current production. Demand has eased for merchant wire.

Plates . . .

Plate Prices, Page 173

Philadelphia—While some plate producers expect an easing in second quarter, current demand is active. Especially strong are requirements for sheared plate, $\frac{1}{4}$-in. and heavier. Few producers have any capacity open for nondefense in first quarter. Lukens Steel Co., Coatesville, Pa., recently lost about a week's operation on its 206-in. mill due to a broken coupling.

Boston—Only in one or two cases did mills delay opening books for March. Except for heavier plates, producers expect to be caught up on delinquent tonnage by the end of first quarter with January-February production centered on civilian fourth quarter tickets.

New York—Plates are not generally affected by the proposed increase of 15 per cent in carbon steel quotas for first quarter civilian account. Most producers, particularly sheared plate, are virtually booked up for first quarter already as a result of heavy carry-overs in fourth quarter tonnage and continued high pressure for high rated defense work.

Pittsburgh—Little change in plate supply is expected through first quarter, 1953. Regardless of additional allocations, the mills can only

Steel Production Sets Record

MORE STEEL was produced in October than ever before in a month.

Output that month in the United States was approximately 9,790,000 net tons of steel for ingots and castings, the American Iron & Steel Institute reports. Previous all-time record month was last March, when output was 9,404,191 tons.

To turn out the October tonnage, facilities were operated at 106.4 per cent of capacity. That rate was the highest this year.

October's production raised the cumulative total for this year to 74,010,497 net tons, compared with 87,509,918 tons in the corresponding period of last year. This year's decline is the result of the steelworkers' strike.

Additional details are shown in the table.

	OPEN-HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (Net tons)	No. of weeks in mos.
1952	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity		
January	8,103,123	100.7	407,298	89.3	625,696	89.7	9,136,117	99.3	2,062,329	4.43
February	7,703,066	102.4	382,712	89.8	571,432	87.6	8,657,210	100.7	2,091,114	4.14
March	8,401,140	104.4	378,861	83.1	624,190	89.5	9,404,191	102.2	2,122,842	4.43
1st Qtr.	24,207,329	102.5	1,168,871	87.4	1,821,318	89.0	27,197,518	100.7	2,092,117	13.00
April	7,101,199	91.1	323,006	73.2	566,937	83.9	7,991,142	89.7	1,862,737	4.29
May	7,291,865	90.6	318,642	69.9	594,089	85.2	8,204,596	89.2	1,852,053	4.43
June	1,446,927	18.6	22,862	5.2	169,702	25.1	1,639,491	18.4	382,166	4.29
2nd Qtr.	15,839,991	67.0	664,510	49.6	1,330,728	65.0	17,835,229	66.0	1,370,886	13.01
1st 6 Mos.	40,047,320	84.8	1,833,381	68.5	3,152,046	77.0	45,032,747	83.4	1,731,363	26.01
July	1,347,587	16.8	2,000	0.4	277,371	39.8	1,626,958	17.7	368,090	4.42
August	7,599,888	94.4	309,361	67.8	589,438	84.5	8,498,687	92.4	1,918,440	4.43
September	8,039,128	103.4	351,620	79.8	671,357	99.6	9,062,105	101.9	2,117,314	4.28
3rd Qtr.	16,986,603	71.2	662,981	49.1	1,538,166	74.4	19,187,750	70.4	1,461,367	13.13
9 Mos.	57,033,923	80.2	2,496,362	62.0	4,690,212	76.1	64,220,497	79.0	1,640,789	39.14
†October	8,741,000	108.6	347,000	76.1	702,000	100.6	9,790,000	106.4	2,210,000	4.43
1951										
9 Mos.	69,501,122	102.0	3,624,033	86.2	5,262,777	93.1	78,387,932	100.5	2,009,947	39.00
October	8,028,721	103.8	458,128	95.9	635,037	98.9	9,121,886	103.0	2,059,116	4.43

Note—The percentages of capacity operated in 1952 are calculated on weekly capacities of 1,816,637 net tons open-hearth, 102,926 net tons bessemer and 137,477 net tons electric ingots and steel for castings; total 2,077,040 net tons; based on annual capacities as of Jan. 1, 1952, as follows: Open-hearth 94,973,780 net tons; bessemer 5,381,000 net tons; electric 8,232,890 net tons; total 108,587,670 net tons. The percentages of capacity operated in 1951 are calculated on weekly capacities of 1,746,337 net tons open-hearth, 107,806 net tons bessemer, 144,891 net tons electric ingots and steel for castings, total 1,999,034 net tons; based on annual capacities as of Jan. 1, 1951, as follows: Open-hearth 91,054,020 net tons, bessemer 5,621,000 net tons, electric 7,554,630 net tons; total 104,229,650 net tons.

† Preliminary figures, subject to revision.

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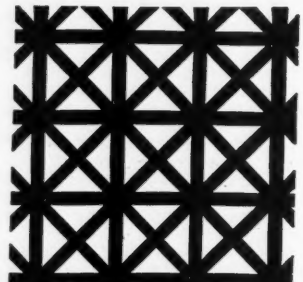

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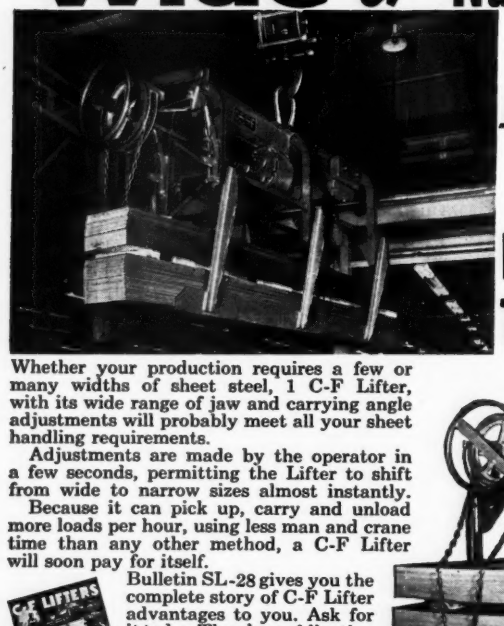

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produce so much tonnage, and books are full, with little promise of early easing.

Seattle — Demand for plates continues active with supplies short. Proposed expansion of oil storage capacity in this area promises more activity for fabricators soon.

Tin Plate . . .

Tin Plate Prices, Page 174

Washington—Revocation of government controls over distribution of secondary tin mill products is under consideration Such action was recommended by the industry advisory committee to NPA as a means of helping the industry to dispose of burdensome accumulations of secondaries. The proposal applies to all tin mill products except specification plate.

NPA also is seeking to develop other methods which will help the industry dispose of its secondary products which the mills find increasingly difficult under the Controlled Materials Plan. Some committee members suggest that export controls be removed.

Additional first quarter 1953 tickets for 600,000 tons of tin mill products are being issued. Of this total 50,000 tons will be for export.

Tin now is coming into this country at a good rate, according to NPA, but lower production can be expected in the Far East. Whether tin imports can be expected in quantity from Bolivia cannot be determined for several months. Meanwhile, government officials report the tin smelter at Texas City, Tex, has enough ore or concentrate on hand and on the beach in Chile to keep it in operation for a year.

Steel Bars . . .

Bar Prices, Page 173

Cleveland—Heavy demands on military account promise to continue well into 1952 so that the prospects for easing supply conditions in the bar market, especially large sizes, are dim. Small-size bars are more readily available now than they were some time back but the mills will go into first quarter with heavy tonnage carryover. Supplemental steel allotments for first quarter include 100,000 tons of hot-rolled bars 1-in. and under, and 180,000 tons of cold-drawn bars.

New York—Recently announced increase in first quarter quotas apparently involves only small rounds, 1-in. and under, and many demands now pressing producers will go relieved. In normal times these smaller sizes are in tightest supply. Over the past two years in particular, however, since the outbreak of the Korean war, greatest stringency has been in the larger sizes. Some bar mills doubt they will be able to accept much additional work for civilian needs even in the smaller sizes.

Philadelphia—Pressure for carbon bars remains, particularly in the larger sizes. Military requirements are heavy and are increasing. Even the smaller sizes are in brisk demand.

Boston—Mills are practically filled for first quarter on alloy and carbon bars, both hot and cold-rolled. In

spots, military set-asides have not been taken up much beyond January in carbon with civilian openings closed beyond that period. Smaller sizes of carbon bars have eased somewhat. Heaviest buyer of forging bars at present is Springfield Arsenal.

Pittsburgh — While deliveries of steel bars are better today than was the case a month or two ago consumers are far from being out of the woods. Their receipts have improved, but they could use more. Smaller diameters continue to be in better supply, pressure being for the larger sizes.

Detroit—Taking bids through Nov. 17, Detroit Tank Automotive Center, will close shortly on 491,600 roller bearings. Inquiries are out also for large quantities of bolts, nuts, rivets and screws.

Chicago—Consumers have little difficulty covering their requirements of carbon bars under 1-in. diameter. This applies to cold-finished as well as hot-rolled. In sizes over 1-in., however, extreme supply tightness prevails. Some users figure their only supply problem in first quarter will be large-size bars and this despite the fact no pushup in the military shell program is projected. Chief bottleneck is the slower production schedule which hot-topped quality steel requires.

Tubular Goods . . .

Tubular Goods Prices, Page 177

Seattle—Cast iron pipe demand is seasonally slow but proposed utility system extensions in a number of cities in this area promise increased buying early next year.

Structural Shapes . . .

Structural Shape Prices, Page 173

Cleveland—While the shortage of structurals is expected to extend well into 1953, construction interests anticipate steady improvement in supply conditions after the turn of the year. Change of administration in Washington, at the same time, is thought likely to result in hurrying along the lifting of curbs on certain classes of construction, thus giving new life to the building industry. Substantial volume of work is in prospect, especially in the way of public construction.

Local bond issues approved at the recent election provide for: Freeway construction, $6 million; street opening and widening, $3,500,000; park development, $1,500,000; road improvements, $3 million; sewage disposal plant expansion, $6 million; sewer construction, $7 million; incinerator construction, $500,000; bridge construction and repair, $1 million; airport development, $6 million; welfare buildings, $1 million; lakefront development, $2,500,000; city hospital improvement, $3 million; playgrounds and recreation centers, $3 million; off-street parking, $2 million; zoo improvements, $1 million.

Boston—Fabricated structural steel deliveries are improving, some shops promising April delivery on medium-sized tonnages placed this month. Contracts being placed for Vermont bridge work, for which structurals have been bought, call for January rolling, February fabrication and

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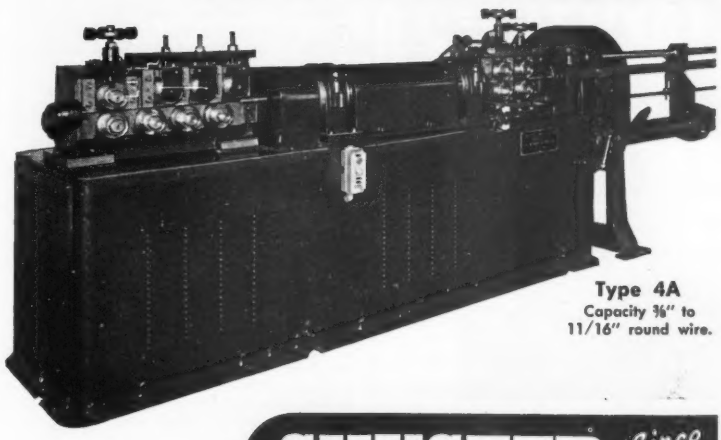

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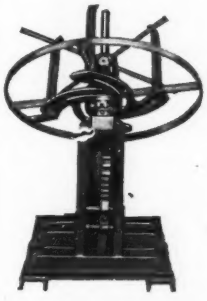

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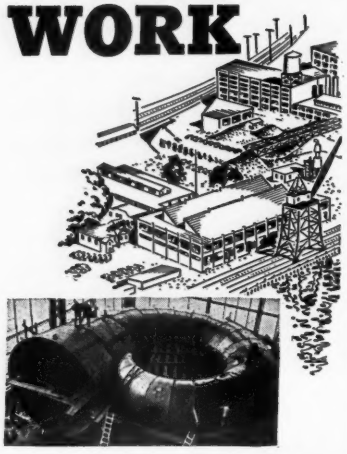

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shipment by March or early April. Vermont has seven additional bridge projects, 1000 tons, including one deck girder span to be let early this winter for spring construction. Standard shapes of foreign origin are offered at 6.00c per pound, Boston dock.

New York — Pickup is noted in structural awards, chiefly public work. Most fabricators do not anticipate much in the way of commercial construction over the next few months. Even should Washington ease building limitations materially in the near future, considered only a possibility, it would take some time for such construction to become active as most plans would be in a preliminary stage.

Philadelphia — Structural fabricators report some improvement in inventory, and believe within another three months stocks will be sufficiently balanced to permit fairly normal operations. Awards are spotty.

Pittsburgh—Demand for structural shapes is steady. Carbuilders and railroads could use more tonnage than they're getting.

Los Angeles—Bridge construction is delayed due to lack of shapes, especially wide-flange beams. Some projects will be held up as much as 60 days until mills can work off arrearages.

San Francisco — Demands of the atomic energy program are prolonging the shortage in structural steel. The new atomic energy plant being built in southeastern Ohio, Henry Heymann of the NPA's general counsel office said on a San Francisco visit, will cost many millions and will require huge amounts of steel.

Seattle—Order backlogs of fabricators are shrinking and competition for new business is more pronounced.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 173

Los Angeles—California state highway construction budget of $170 million will sustain demand for reinforcing material.

Seattle—Rolling mill order backlogs are fair with operations continuing at capacity. Bulk of output is in reinforcing bars.

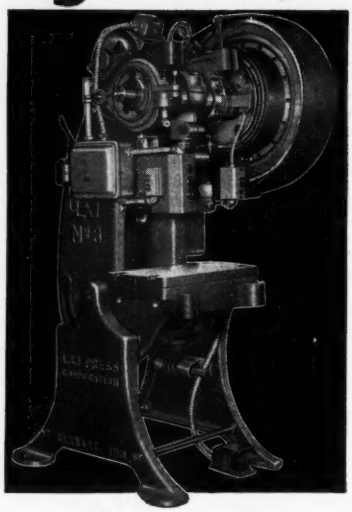
Metallurgical Coke . . .

Metallurgical Coke Prices, Page 177

Pittsburgh—Twenty-nine new coke ovens at the Midland plant of Crucible Steel Co. of America started production Nov. 4 bringing to 213 the number of ovens in operation at the plant. The new Koppers-Becker type ovens, were installed to increase coke capacity for the new blast furnace which will go into production next month. Annual coke capacity of the new ovens, 112,000 tons, boosts capacity for the works to 832,000 tons. Coal for the Midland ovens is supplied from Crucible's mines at Crucible, Pa., being transported to Midland by river boat.

Chicago—Two of the Gary steelworks 16 coke oven batteries are to be dismantled and rebuilt, according to John H. Vohr, general superintendent of this U. S. Steel Co. plant. Each of the new batteries will contain 77 coke ovens and will include

L&J PRESSES



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new coal and coke-handling equipment. The No. 5 battery was taken out of operation Nov. 10, and No. 7 battery will be made inoperative shortly. It will take about a year for the dismantling and rebuilding job. Wilputte Coke Oven Division, Allied Chemical & Dye Corp., has the contract.

Pig Iron . . .

Pig Iron Prices, Page 172

Chicago — Unless foundry operations pick up sharply, pig iron isn't likely to cause any pinch during the remainder of this year. Strikes in several farm implement foundries continue to hurt. Iron is not easy by any means, but there is enough to go around on present consumption level. Additional output of foundry iron is not likely so long as steelmaking operations take the bulk of blast furnace output.

Boston—That pig iron supply has eased is indicated by offerings of tonnage from other districts, including Buffalo. Unless repairs at the Mystic furnace take longer than expected, reserves will be sufficient to meet contract requirements. Stock at the furnace is well balanced as to analyses, both foundry and malleable.

New York—With most labor disturbances at local district foundries ended for the time being at least, there is some increase in pig iron demand. This improvement isn't resulting in any particular stringency, however, as most shops are not operating at even normal production rate.

New York—Swedish charcoal pig iron has been reduced $6 per ton to $135 c.i.f. eastern seaboard. This is well above the domestic market as indicated by a $68.50 furnace price at Lyles, Tenn.

Buffalo—An estimated 80 per cent of current pig iron output in this district is going into steel production. Except for one furnace on special grade iron, the entire iron output of two leading producers is going into hot metal. Demand is ample to absorb merchant iron output.

Philadelphia — Except for basic, which continues scarce, pig iron supply here is in fair balance with demand. This is due to better shipments from outside suppliers and to sluggish operations at gray iron shops.

Cleveland — Merchant iron sellers are disposing of all available tonnage but they are not under extreme demand pressure. Foundries are comfortably supplied and with government inventory limitations still in effect no effort is being made to stock beyond 30-days. At the same time, iron melters are not fully engaged. In general, shops on government work are expected to be busy for months to come. Here and there a pickup in castings orders on civilian account is reported.

St. Louis—Pig iron demand from foundries is picking up. One of the two blast furnaces here will go on foundry iron production for the first time in three months.

Los Angeles — Merchant iron demand is up about 10 per cent due to heavier needs of foundries supplying agriculture and the building trades.

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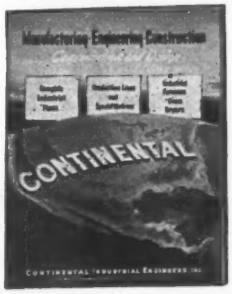

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Scrap . . .

Scrap Prices, Page 180

Cleveland—Steel scrap is moving to the mills steadily at ceiling prices. Some district yards are virtually clean, especially of quality material. Heavy consumption, reflected in high level steelmaking operations, and desire of the mills to maintain inventories as protection against winter holdup of shipments, is seen behind the steady movement from dealers' yards. Good grades of foundry scrap also are moving well, but unstripped motor blocks and less desirable cast grades are sluggish with operations at some foundries lagging. Substantial tonnage is moving from this area to electric furnaces in the Valley.

Boston—Mills are taking steel scrap shipments in steady volume. Most appear satisfied with their inventory position. Prices are at ceiling from yard to consumer with the former taking in scrap in about the same volume as it is being shipped. Few yards are building inventories. Cast is slow and weak. Some grades are $10 under ceiling.

New York—Brokers' prices are unchanged with the market active on most steel grades and high grade foundry scrap.

Buffalo—Scrap shipments to the leading mill consumer in this area are heavy, deliveries being augmented by extension into the seventh week of an embargo on shipments to another district steelworks. Mill stockpiles are bulging with water receipts heavy. Steel grades show no sign of backing away from ceiling price levels. The cast market, however, is soft with buying light.

Philadelphia—District yards are getting less steel scrap and this is beginning to reflect itself at the mills. Consumers, however, still have fairly substantial inventories. Auto wreckers are doing virtually nothing, in part because unstripped motor blocks are a drug on the market. Last representative sale of motor blocks was made some time ago at $42 delivered. It would appear this price could be shaved by at least $1.

Pittsburgh—Mills are buying good grades of scrap especially clean turnings, but not in large quantities. Quality cast grades are moving also, but other grades can't find buyers. While mills have substantial inventories they are not what they were a month ago.

St. Louis—Dealers' shipments of scrap are low despite open weather. Rural sources have virtually dried up. Cast trade is dull with little interest by consumers. Rail offerings continue low.

Los Angeles — Undertone of the cast scrap market is weaker. Mill buying is steady but quiet. Price of machine shop turnings fell to $14 per gross ton, $11 below ceiling, and sales are spurting.

San Francisco — Prices show no change in any of the open-hearth or foundry grades of scrap.

Seattle—Scrap market conditions are unchanged with receipts covering current consumption. Inventories are virtually static. One local plant reports a healthy stockpile that will carry through the winter. Distant and off-shore shipments are noncompetitive. The government has salvaged a large tonnage from the Aleutians, but buyers state labor and transportation involved in bringing scrap from interior Alaska make delivered costs excessive. Ceiling is paid for heavy melting steel, but bundles are quoted $5 under maximum.

Rails, Cars . . .

Track Material Prices, Page 175

New York—Domestic freight car awards in October totaled 1423, bringing the order backlog as of Nov. 1 up to 90,708 cars, according to the American Railway Car Institute and Association of American Railroads. Slight increase in available steel enabled shops to increase October shipments to 5437 cars against the September low of 3762. October deliveries a year ago amounted to 10,082 cars.

Warehouse . . .

Warehouse Prices, Page 179

Baltimore—Warehouse inventories may approach normal levels during first half, 1953 but severe shortages of certain types and sizes will continue due to the defense program, predicted John E. Doxsey, assistant to president, American Steel Warehouse Association, Cleveland, following a press tour of two local warehouses sponsored by the Baltimore chapter of the organization.

Inventories, over-all, have climbed to around 35 to 40 per cent of normal since the low created by the steel strike but they are still tremendously unbalanced.

Tour, encompassing warehouses of A. M. Castle & Co. and Steel Specialties Inc., was the eleventh of a series sponsored by local chapters throughout the country.

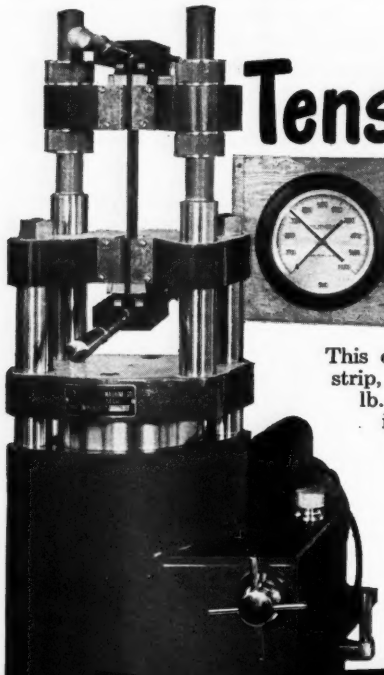
Philadelphia—Steel warehouse business may be off this month due to fewer working days, but there is no lag to date on a daily tonnage basis. Some distributors report an increase.

Harrisburg, Pa.—A leading warehouse here reports business slightly ahead of that in October on a daily basis. Cold-drawn bars are in shortest supply, including all sizes. Hot-rolled strip is in longest supply. Mill shipments of major standard products are a month to six weeks behind schedule.

Pittsburgh — Deliveries to warehouses are improved, but not in proportion to demand. Most needed items, such as large diameter bars and heavy gage plates, are not being received in sufficient quantity to fill outstanding orders.

Cleveland—While steel distributors in this area are in receipt of substantial tonnage from the mills their inventories still are unbalanced and consumers have to do considerable shopping around to fill all their requirements. Prospects are not too promising that supply conditions will improve much before second quarter next year.

Chicago—In all products except welded tubing and alloy, demand exceeds supply. Receipts from the mills are steady and substantial but inventories are not improving. Stocks are slipping as distributors seek to push sales volume to highest possible



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level. Expected easing in demand for sheets has failed to show up.

Los Angeles—Warehouse order volume is steady at the October level. Inquiry volume is unchanged from last month's level.

Seattle—Warehouse business is improved and supplies are reported slightly larger. Plates and sheets, however, remain critically short.

Iron Ore . . .

Iron Ore Prices, Page 179

Cleveland—Barring unusually severe weather on the Great Lakes over remainder of this month, Lake vessel operators appear certain to attain their ore shipment goal of 75 million tons for the 1952 season. Movement of 2,562,910 gross tons in the week ended Nov. 10, brought the cumulative total for the season to 68,732,345 tons. In the like week of 1951 shipments amounted to only 1,220,219 tons, but the season's movement to Nov. 10 stood at 84,212,411 tons.

Indicative of the concerted effort being made by lake shippers to achieve the 75 million-ton-goal before the lakes freeze over, on Monday, Nov. 10, a new record for the date was set when about 80 downbound, ore-laden vessels, passed through the Soo Locks with an estimated 250,000 tons.

Washington—Imports of iron ore into the United States in the first six months this year totaled 4,199,266 gross tons valued at $33,934,587, according to the Bureau of Mines, Interior Department. Largest tonnage, 1,076,250, came from Chile, followed by Sweden with 1.039.000: Venezue'a, 830,927: Brazil. 399.975; Canada, 347,528; Liberia, 243,767; Brit'sh W. Africa, 112,300; Algeria, 66,008; Mexico, 58,342; Tunisia, 9500; Cuba, 8565; Spain. 4600; Iran, 1472; United Kingdom, 531.

Canada . . .

Toronto, Ont.—Canadian supplies of steel are increasing and may balance demand soon though requirements have not declined, according to H. G. Hilton, president, Steel Co. of Canada Ltd. He points out new capacity, coming into production in all major steelmaking countries, is causing pressure in international markets, and is being reflected in larger Canadian imports than in 1951.

Imports of primary iron and steel shapes in the first seven months this year totaled 1,007,908 tons, of which 721,280 came from the United States. Comparable figures for 1951 are 915,135 tons and 580,418, respectively.

Iron and steel production in Canada is maintaining a rate above that of 1951. Pig iron output in the first eight months this year totaled 1,780,693 net tons. This compares with 1,671,650 in the like 1951 period. Production of steel ingots and castings was 2,507,236 tons this year to Sept. 1 against 2,386,097 in the same 1951 period.

August pig iron output was 221,387 net tons, comparing with 229,561 in July, and 203,186 in August, 1951. Production of steel ingots and castings in the month amounted to 298,913 tons, comparing with 293,408 in July and 286,804 in August last year.

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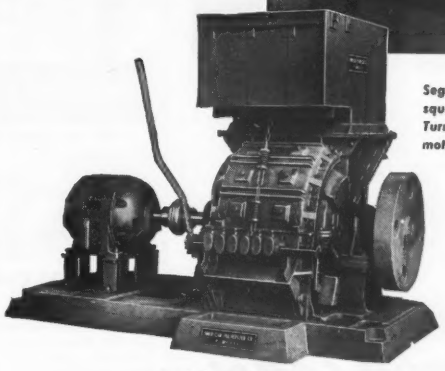

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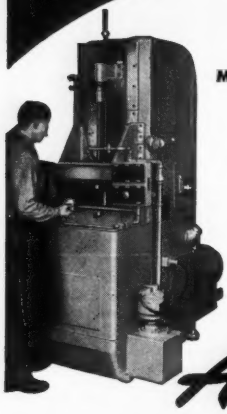

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STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

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3845 tons; equipment building, 3265 tons; dial building addition, Waterbury, Conn., to Topper & Briggs, Hartford, Conn., Bethlehem Fabricators Inc., Bethlehem, Pa., for Southern New England Telephone Co.

3300 tons, addition, Kaiser aluminum extrusion plant, Baltimore, to Belmont Iron Works, Eddystone, Pa.

1000 tons, government warehouse, Metuchen, N. J., through Carl Buhr, New York, general contractor, to Bethlehem Steel Co.

960 tons, domestic relations court, Brooklyn, N. Y., through Warshaw Construction Co., general contractor, to Grand Iron Works, New York

800 tons, factory building, General Electric Realty Co., Bridgeport, Conn., to Ernst Iron Works Inc., Buffalo, N. Y.

425 tons, seven radio towers, American Telephone & Telegraph Co., for erection in New York state, to Blaw Knox Co., Pittsburgh.

275 tons, plant addition, Jones & Lamson Machine Co., Springfield, Vt., to Bethlehem Steel Co.; Morton C. Tuttle Co., Boston, general contractor; reinforcing to Concrete Steel Co., Boston.

250 tons, Washington state Trinidad bridge, reported placed with American Bridge Co., Portland, Oreg.

250 tons, structurals and bars, junior high school building, Worcester, Mass., to West End Iron Works, Cambridge, Mass., and Joseph T. Ryerson & Son Inc., Cambridge; J. Slotnick Co., Boston, general contractor.

250 tons, deck replacement and repairs, Broadway bridge, Boston, to Groisser & Shlager Iron Works, Somerville, Mass.; Martin J. Kelley Co. Inc., Boston, general contractor; 80 tons, reinforcing bars, to Joseph T. Ryerson & Son Inc., Cambridge.

248 tons, state bridge, Montgomery county, New York, through Lane Construction Co., to Bethlehem Steel Co.

169 tons, state bridge work, Ulster county, New York, to the American Bridge Co., Pittsburgh.

165 tons, beam bridges, Ludlow and Rockingham, Vt., to Vermont Structural Steel Co., Burlington, Vt.; placed direct by towns.

120 tons, state hospital addition, Wrentham, Mass.; 65 tons of structurals to Groisser & Shlager Iron Works, Somerville, Mass., and 55 tons bars to Truscon Steel Division, Republic Steel Corp., Boston; Rich Bros. Construction Co., Boston, general contractor.

STRUCTURAL STEEL PENDING

3300 tons, miscellaneous bridge work, state thruway, Albany county, New York, bids Nov. 30.

2700 tons, office building, 199 Church St., for State Insurance Fund, 625 Madison Ave., New York, bids Nov. 25.

1800 tons, maintenance hangar building, airfield base, Lake Charles, La.; bids about Dec. 18, Corps of Engineers, Galveston, Tex.

1400 tons, Washington state Snohomish bridge, Manson Construction & Engineering Co., Seattle, low $1,913,000, base bid.

1300 tons, Hanford works construction; rebids opened Nov. 14 by Kaiser Engineering Co., Oakland, Calif.

980 tons, Corps of Engineers, Pittsburgh; bids Dec. 1.

885 tons, bridge, steel girder spans, Anacostia river, District of Columbia, Harris Structural Steel Co., New York, low bidder.

630 tons, wide flanged beams, Corps of Engineers, San Francisco.

350 tons, three-span continuous deck plate girder bridge, Readsboro, Vt.; also 85 tons, reinforcing bars, and 1953 linear feet steel piling.

200 tons, Ault field, Washington state, Navy Station; Strand & Sons, Seattle, awarded general contract.

200 tons, including crane rail, steel pipe, etc., Lookout Point powerhouse, Oregon state; base bid in to U. S. Engineer, Portland, Oreg.

160 tons, I-beams, Corps of Engineers, San Francisco.

135 tons, WF beam bridges, Warren, Vt.; also 85 tons, reinforcing bars.

100 tons, 99-foot WF beam bridge, Bradford, Vt.

100 tons, WF beam bridge, Ferrisburg, Vt.

REINFORCING BARS . . .

REINFORCING BARS PLACED

325 tons, storage battery building, naval shipyard, Portsmouth, N. H., to Joseph T. Ryerson & Son Inc., Cambridge, Mass.; Jefferson Construction Co., Cambridge, Mass., general contractor; structurals and miscellaneous steel to Builders Iron Works, Somerville, Mass.; bars previously reported as going to another fabricator.

260 tons, addition, New England Baptist Hospital, Roxbury, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; also 60 tons fabricated structurals, to Groisser & Shlager Iron Works, Somerville, Mass., through George A. Fuller Co., Boston, general contractor.

175 tons, building, naval shipyard, Portsmouth, N. H., Farina Construction Co., Boston, general contractor.

100 tons, Beethoven school, Newton, Mass., to Joseph T. Ryerson & Son Inc., Cambridge, Mass.; J. F. Rand & Son, Boston, general contractor; also 65 tons, structural steel, to Groisser & Shlager Iron Works, Somerville, Mass.

REINFORCING BARS PENDING

750 tons, Washington state Snohomish river bridge; base bids in.

575 tons, addition to King county hospital, Seattle; J. C. Boespflug Construction Co., Seattle, low $1,960,391.

270 tons, five-story Mason clinic, Seattle; J. G. Watts, Seattle, low $510,159.

250 tons, Corps of Engineers, San Francisco.

225 tons, Washington state highway bridge, Spokane county; Curtis Gravel Co., Spokane, Wash., low $560,612.

725 tons, state bridge work, Gloucester county, New Jersey, bids Dec. 2; also an alternate item of 6600 lineal feet of steel bearing pile.

120 tons, Lookout Pt. powerhouse; low joint base bid in to U. S. Engineer, Portland, Oreg.

PLATES . . .

PLATES PLACED

4400 tons, twenty tanks, Esso Standard Oil Co., Waltham, Mass., to Bethlehem Steel Co., Bethlehem, Pa.

1550 tons, pipe for intersepting sewer, Bayonne, N. J., awarded through Garden State Constructors, to Bethlehem Steel Co.

1350 tons, tanks, erection at Du Pont, Pa., and Bestal, N. Y., California Refining Co., to Bethlehem Steel Co.

580 tons, tanks, California Refining Co., Perth Amboy, N. J., to Graver Tank & Mfg. Co. Inc., East Chicago, Ind.

100 tons plus, stainless steel containers, Hanford Works, Washington state, to American Pipe & Construction Co., Portland, Oreg.

PLATES PENDING

100 tons, 200,000-gallon elevated water tank, marine school, Quantico, Va.; Chicago Bridge & Iron Co., Chicago, low $43,960.

RAILS, CARS . . .

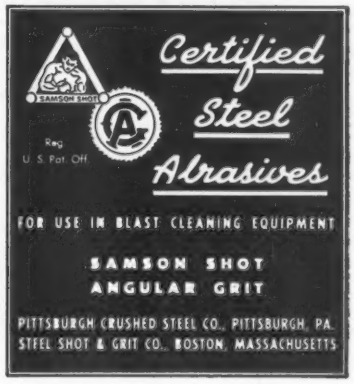
RAILROAD CARS PLACED

Atlantic Coast Line, 2000 freight cars placed; 800 fifty-ton pulp wood cars to the Bethlehem Steel Co., Bethlehem, Pa.; 600 seventy-ton hopper cars to the Pullman-Standard Car Mfg. Co., Chicago; 600 seventy-ton covered hopper cars to American Car & Foundry Co., New York.

Canadian National, 300 passenger cars, with 161 coaches going to the Canadian Car & Foundry Co., Montreal, Que., and 84 sleeping cars, 14 standard dining cars, six dinette cars, nine buffet parlor cars, six parlor cars, ten buffet sleepers, eight buffet lounge cars and two parlor buffet cars, to Pullman-Standard Car Mfg. Co., Chicago.

RAILS PENDING

Alaska Railroad, 1725 tons 115-lb. rail also 2000 tons tie plates, and other accessories; bids received at Seattle by General Services Administration, and referred to railroad officials in Alaska for decision.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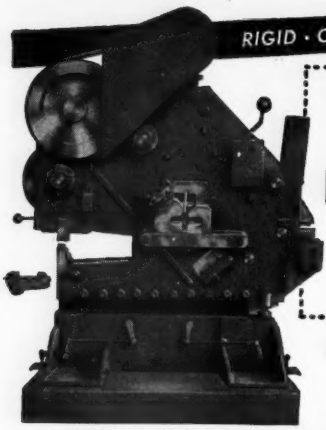

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PARTIAL SPECIFICATIONS	T 15	T 25	T 30
Punch capacity	7/8" x 7/16"	1" x 9/16"	1-3/16" x ½" or 1-1/16" x 5/8"
Shears Plates	7/16"	½"	5/8"
Shears Flats	3-3/16" x 9/16"	3-3/16" x 5/8"	4" x ¾"
Shears Angles (Square Cut)	3½" x 5/16"	4" x 3/8"	5" x ½"
Shears Tees	3½" x 5/16"	4" x 3/8"	4¾"
Shears Round	1-13/16"	1⅜"	1¾"
Shears Square	1"	1¼"	1½"

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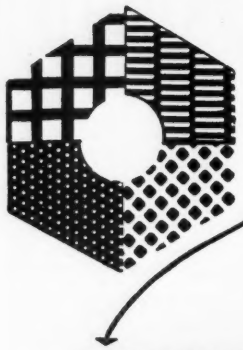

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Here and There in Metalworking . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

U. S. Steel Places Coke Oven Order

United States Steel Co., Pittsburgh, awarded a contract to Wilputte Coke Oven Division, Allied Chemical & Dye Corp., New York, for designing and erecting two coke oven batteries of 77 ovens each at Gary Steel Works, Gary, Ind. The units will be Wilputte underjet, low-differential coke ovens with a combined capacity to produce a large tonnage of coke and, in addition, large quantities of gas and valuable chemicals. The contract covers complete facilities, including coal and coke handling equipment. The ovens will be equipped with Wilputte special design self-sealing hydraulically-operated doors, flexible steel sealing plates, and renewable stainless steel sealing strips. They can be underfired with either coke oven gas or blast furnace gas generated on the property.

Seven batteries of Wilputte coke ovens have been built heretofore at the Gary Steel Works, and Wilputte Division is presently completing two coke oven batteries for the Fairless Works of United States Steel Co., near Morrisville, Pa.

Iron Roofing Firm Opens Branch

Southern States Iron Roofing Co., Savannah, Ga., opened a branch warehouse in Miami, Fla., which will carry a complete stock of building materials and metal products. E. D. Cole is the Miami branch manager.

Stronghold Screw Products Expands

Stronghold Screw Products Inc., Chicago, purchased a building, comprising 80,000 sq ft, at 1801 W. Winnemac Ave., that city. This acquisition will enable the company to double its facilities for making screws, nuts, bolts, etc. The company will take possession of the building on or before Apr. 1, 1953.

De Vlieg Appoints Representative

De Vlieg Microbore Co., Ferndale, Mich., appointed W. S. Gallagher Co. Inc., Buffalo, as its exclusive representative in central and western New York state. De Vlieg makes boring and milling machines.

More Firms To Use Al-Fin Process

Al-Fin Division, Fairchild Engine & Airplane Corp., Farmingdale, N. Y., licensed two additional firms in this country and two abroad to use its process for joining aluminum and its alloys to steel and cast iron, or to nickel and titanium. The latest licensing agreements were signed with Thompson Products Inc., Cleveland and St. Catherines, Ont.; National Steel & Shipbuilding Corp., San Diego, Calif.; Etablissements J. Floquet, Courbevoie, France; and W. & W. Schenk, Maulbronn, Germany.

Detroit Machine Tool Firm Moves

Montgomery Engineering Co. moved its offices, shop and warehouse to 8500 Twelfth St., Detroit. The firm deals in new machine tools and air tools, reconditions used machinery and designs and builds tools and fixtures.

Plans $8 Million Refinery Addition

British American Oil Co. Ltd., Toronto, Ont., will spend $8 million on additions to its refinery in Clarkson, Ont. Additions will include a catalytic cracking unit, a catalytic polymerization unit, gas concentration and other facilities.

Hanna Engineering Names Agents

Hanna Engineering Works, Chicago, appointed Haldeman-Langford, St. Paul, and Scott Equipment & Engineering Co., Indianapolis, as sales representatives to handle distribution of its air and hydraulic cylinders and control valves in their respective territories.

Engine Parts Plant Opened in East

Pratt & Whitney Aircraft Division, United Aircraft Corp., East Hartford, Conn., formally dedicated its North Haven branch plant on Nov. 16. The plant manufactures parts for piston engines and could be converted to the manufacture of jet engine parts. An area in the plant is set aside for fabrication of sheet metal parts for experimental jets. The plant has 700,000 sq ft of floor space, of which 500,000 sq ft are devoted to manufacturing, the balance being used for engineering, administrative, training and service.

Tri-State Defense Industries Formed

A new production pool, the 18th to be formed under the current mobilization program, has been organized. Known as Tri-State Defense Industries Inc., 171 Madison Ave., New York, the pool is composed of eight firms banded together for their mutual assistance in obtaining defense contracts. Members are: Ace Utilities Inc., Arrow Conduit & Fittings Corp., Fluorescent Wiring Devices, Gilton Mfg. Corp., and Pitz Foundry Inc., all of Brooklyn, N. Y.; Eugene J. Brandt & Co. Inc. and Paramount Metal Spinning & Stamping Co. Inc., New York; Ducate Bros., Lincoln Park, N. J. The member firms are engaged in the manufacture of metal products and electrical devices. They propose to seek defense contracts for production of such items as aluminum and steel lockers, cabinets and castings, vacuum and condensation pumps, steel and tubular furniture, electric wiring devices, dry cell battery cases, waterproof boxes, propellers for ships, and many types of sheet metal products.

Eastern Brass Improves Facilities

Eastern Brass & Copper Co., New York, expanded its controlled- atmosphere annealing facilities to keep pace with the present mill policy of delivering larger and heavier coils. New nichrome bells for Eastern's annealing oven will take coils up to 35 in. in diameter. The oven itself was widened, while the installation of an overhead crane system of greater capacity permits individual charges of up to 6000 lb to be loaded. Eastern's annealing process enables the metal warehousing and processing firm to obtain bright finishes on narrow gages.

Diesel Power Enlarges Facilities

Diesel Power Inc., Pittsburgh, awarded the contract for erection of an additional building on its Camp Reynolds plot near Greenville, Pa. The building will be used for assembling and testing the company's improved type of diesel engines and will include, among other equipment, a wind tunnel. This will be the second structure added to facilitate the production of diesel engines since the company's purchase of the plant of Industrial Machine Co. last July.

Murray Buys Triplex Screw Co.

Murray Corp. of America, Detroit, acquired the capital stock of Triplex Screw Co. Inc., Cleveland, manufacturer of various types of fasteners.

Mojac Engineering Opens New Offices

Mojac Engineering Co. opened its new offices located at 189 Freeport Rd., Blawnox, Pa. The company makes pulverizers.

Westinghouse Gets Weirton Contract

Westinghouse Electric Corp., Pittsburgh, received a $572,000 order from Weirton Steel Co., Weirton, W. Va., for additions to an electrolytic tinning line which was installed in 1949. The line has a maximum speed of 2000 fpm and uses high frequency radio waves to "reflow" the tin and pro-

vide a glossy surface. For use in extending facilities for operation at higher speeds or increasing the thickness of the tin coating, Weirton will install additional plating generator capacity of 600 kw.

Cory Purchases Autopoint Co.

Cory Corp., Chicago, acquired all assets of Autopoint Co., that city, producer of mechanical pencils and plastic specialty items.

Barrows Heads Porcelain Enamel Group

Porcelain Enamel Institute, Washington, elected the following officers for the coming year: W. A. Barrows, Barrows Porcelain Enamel Co., Cincinnati, president; H. H. Wineburgh, Texlite Inc., Dallas, W. N. Noble, Ferro Corp., Cleveland, E. O. Brady, Briggs Mfg. Co., Detroit, R. C. Myers, United States Steel Co., Pittsburgh, R. N. Smith, Temco Inc., Nashville, Tenn., J. A. Holcomb, Wolverine Porcelain Enameling Co., Detroit, vice presidents; P. B. McBride, Porcelain Metals Corp., Louisville, Ky., treasurer; Edward Mackasek, managing director, and John C. Oliver, secretary, both of Washington.

National Carbon To Build in Canada

National Carbon Ltd. plans to build a million dollar flashlight and dry battery plant near Walkerton, Ont.

Plans Metal Working Machine Exhibit

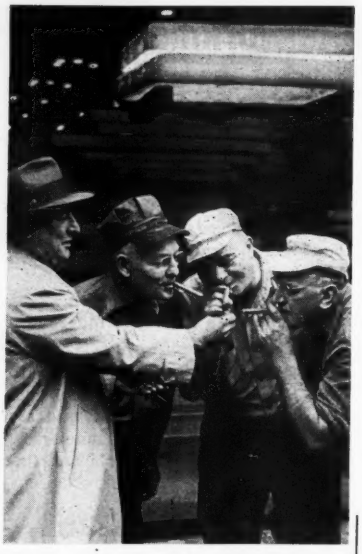
An exhibit of sheet metal working machines will be held during the first week of December in the Rochester, N. Y., warehouse of Follansbee Metal Warehouses Division, Follansbee Steel Corp., Pittsburgh. The machines, manufactured by Niagara Machine & Tool Works and others, include foot shears, power tables, bar folders and squaring machines. Raymond Bolton will be in charge of the exhibit. Balance of the warehouse will be open for inspection to all visitors.

West Coast Branch Office Moved

Osgood Co., Marion, O., and General Excavator Co., celebrating 100 years of continuous manufacture of power shovels and materials handling equipment, moved their West Coast sales and service branch to larger quarters in South San Francisco.

Snell Offers Mexican Services

With an eye to helping United States industrialists find what they want in Mexico City, Foster D. Snell de Mexico is offering its contacts, offices and experience to business and professional people who want to avoid frequent and costly trips to Mexico. The parent organization, Foster D. Snell Inc., New York, began its new activity in Mexico over two years ago, primarily to furnish research and development services from its laboratories in New York.



Record Set, Men Relax

In recognition of record production of 214,842 net tons in the single month of October, C. J. Fleisch, assistant general superintendent of 45-inch slabbing mill at U. S. Steel Corp.'s Homestead, Pa., plant, lights cigars for three of his workers. The men are, left to right, Albert Kern, Thomas O'Brien and William Selleman. U. S. Steel set a new one-month record with production of 3,195,761 net tons of steel ingots

Clark Appoints Truck Distributor

Industrial Truck Division, Clark Equipment Co., Battle Creek, Mich., appointed Lukas Equipment Co., Columbia, S. C., as its distributor in that state.

Webster-Chicago Changes Franchises

Webster-Chicago Corp., Chicago, is consolidating distribution of all of its consumer products with the 162 distributors who have been carrying its complete line. This will mean that 600 parts jobbers, who have been outlets for Webcor components, will no longer be franchised outlets for these items. The company is a major producer of phonographs, diskchangers, wire and tape recorders, and dictation machines.

Pond and Halfacre Form Partnership

Cecil R. Pond, Birmingham, franchise representative for Automatic Transportation Co., Chicago, manufacturer of electric industrial trucks, formed a partnership, Pond-Halfacre Co. Joining Mr. Pond in the partnership is I. L. Halfacre.

Electric Furnace Distributors Merge

J. K. Munhall Co. merged with Eastern Foundry Supplies Inc., Newark, N. J. The J. K. Munhall Co. is the Buffalo representative for Detroit Electric Furnace Division, Kuhlman Electric Co., Bay City, Mich., while Eastern Foundry Supplies is the division's representative for all of New York, northern New Jersey and the New England states. Mr. Munhall moved his offices to Newark.

Canadian Carborundum Erects Building

Canadian Carborundum Co. Ltd. is erecting a sales office and warehouse near Toronto, Ont.

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ALL METALS
Also Screw Machine Products to Order
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MOTORS
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STANDARD GAUGE FREIGHT CARS

Box, Double Sheathed, 50-Ton Capacity
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Flats 40- and 50-Ton, Steel Underframe, 40'0"
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Gondolas, Composite, or All Steel 50-Ton and 70-Ton
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Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Hoppers, All-Steel, 70-Ton, Cross Dump
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Tank, 8,000-Gallon, Coiled and Non-Coiled

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40 & 50-Ton Capacity, Length 70' and 74'

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Small Cutting Tool Business

A small business engaged in the manufacture of special machine knives, having the necessary machine tools, patterns and dies is available for sale. This line of tools would be a good addition to an established tool company. We are interested either in selling as a unit or in securing additional capital to further develop this line. Write Box 592, STEEL, Penton Bldg., Cleveland 13, Ohio.

Help Wanted

ESTIMATOR—Midwest steel and alloy plate fabrication shop desires a mechanical engineer, experienced in estimating labor and material of tanks, piping, ducts, etc. Confidential. State age, former employers, education, experience and salary required. Address Box 596, STEEL, Penton Building, Cleveland 13, Ohio.

FOREMAN

Steel warehouse in Pittsburgh District has opening for experienced, capable foreman for supervision of receiving and shipping floors. Requires aggressive, accurate man who can get real effectiveness from mechanized plant. Reply to Box 605, STEEL, Penton Bldg., Cleveland 13, Ohio.

SALESMAN—STRUCTURAL STEEL

An old and well established Company serving the North Central States' area with fabricated and erected structural steel offers a responsible position to an experienced and capable estimator-salesman. Prefer graduate engineer, 35 to 45 years of age, with a considerable and successful background in this type of work. Replies should include full particulars as to age, education, experience, and marital status. Correspondence will be held confidential and interview arranged for if qualifications warrant. Write Box 604, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

PLANT MANAGER: M.I.T. GRADUATE WITH 25 years' experience in Plant Management, including Production planning, machine and plant loading, Material and tool control, quality control, purchasing, incentives, standard costs, variable budgets, overhead analysis and break-even charts, job evaluation, supervisory responsibility chart and labor relations. Capable administrator with excellent record. Write Box 559, STEEL, Penton Bldg., Cleveland 13, Ohio.

SALES OR ADMINISTRATIVE position wanted by man with varied and extended experience in power press and machinery fields. Can handle sales and advertising, development of direct sales and dealer organizations and government relations. Excellent record on promotion and sales. Experienced in dealing with government both in World War II and Korean emergency. Now completing six months of service with government agency on loan from major company. Circumstances beyond my control make it desirable to seek challenging new position in line with my capabilities. Write Box 599, STEEL, Penton Bldg., Cleveland 13, Ohio.

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Topnotch sales executive and salesman with experience in the selling of strip steel and steel strapping needed by old, well-established producer and distributor. Salary and incentive. Give full details.

Write Box 598, STEEL
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Experienced in operation of Board Drop Hammers 800 to 3000 lb. size and related equipment. Excellent opportunity with well established firm. Please state qualifications in detail.

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3—8" x 12" United 2-High Cold Mills with Combination Pinion Stands and Gear Sets; D. C. Motor Drives; Coilers.

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1 United Draw Bench, 15,000 lbs. pull, reduced for quick sale. 40 HP, 440 V 60 Cycle, 3-Phase Motor. In operating condition; available for inspection.

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Exceptional $1000 monthly warehouse, 10,250 square feet. Air-conditioned offices, 3500 square foot railroad siding, truck entrances, 2000-pound scale, storage racks optional. Wood paneled executive offices, 2 large concrete vaults, steel doors, and 4 complete washrooms. Gas hot water heated. At your convenience, call FAirfax 1-1030.

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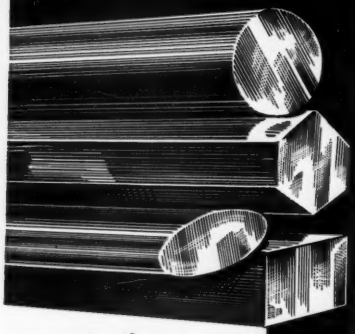

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Turned and Polished Shafting
—Turned and Ground Shafting
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Works: Ambridge, Pa. • Chicago, Ill.
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New Lake Steamer in The Spotlight

Night life at a busy Cleveland dock features unloading operations on the steamer *John G. Munson*, new 666-foot self-unloader of U. S. Steel Corp.'s Michigan Limestone Division fleet. As the brilliantly-lighted Terminal tower shines in the background, some 20,000 net tons of limestone are removed from the ship. Making her first trip to Cleveland, the *Munson* brought the cargo from Calcite, Mich.

Steeley To Build Plant in Canada

Steeley Co. Ltd., Worksop, England, through a new subsidiary, Steeley of Canada Ltd., will erect a rotary kiln plant in Dundas, Ont. The plant, to cost about $2.5 million, will make a type of burned dolomite not presently made in Canada. The principal market for dolomite refractories will be the Canadian steel industries, which up to the present have been obtaining supplies in the United States. The plant is scheduled to be opened in 1954.

R. Lavin & Sons Completes Project

R. Lavin & Sons Inc., Chicago, smelter and refiner of nonferrous metals, completed installation of equipment for the collection of zinc oxide fumes. The equipment has the latest mechanical improvements for the handling of the reclaimed zinc oxide. Similar equipment was installed several years ago in the company's North Chicago plant.

Use of Rezolin Products Spurts

Rezolin Inc., Detroit, moved into larger quarters at 19368 James Couzens highway. The expansion follows wide interest created in the company's Tool-Plastik by Chrysler's feat of using plastic dies for stamping cowl panels at its Nine Mile plant. As a further move in serving the automotive industry, Rezolin Inc. entered into a contractual arrangement with Allied Products Corp., Creative Industries, Warren Plastics and Progressive Welders Canada Ltd., whereby their personnel is trained in the handling and processing of Rezolin materials and techniques. These companies have facilities for production of plastic models, dies and miscellaneous tools.

Sub-Zero Products Names Agents

Sub-Zero Products Co., Cincinnati, appointed as its field representatives: Tucker Wilson Co., Roseville, Mich.; Tidewater Supply Co., Columbia, S. C.; Mid-Continent Products Co., Chicago; O'Toole Dodridge Co., Gardena, Calif.; E & L Metcalf Co., Perth, Australia. The company makes low temperature industrial chilling machines.

Pipe Line Supply Co. Opens Branch

Pipe Line Supply Co., Houston, established a sales office and warehouse in Birmingham.

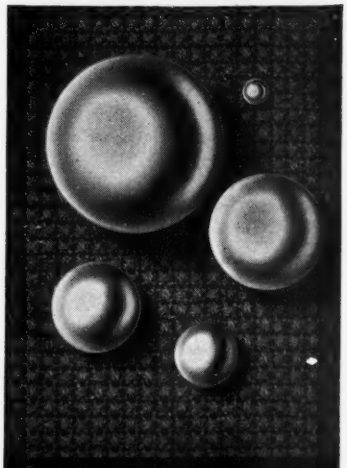
Curtin Establishes Regional Office

W. H. Curtin & Co., Houston, manufacturers of laboratory chemical apparatus, established its southeast regional sales offices in Birmingham. Glenn Estess is the regional manager.

Ford Plans $5 Million Test Building

A $5 million jet engine test building will be constructed at the Ford aircraft plant at 7401 S. Cicero, Detroit. Ford Motor Co., as prime contractor for the Air Force, invited bids for the foundations for the new structure and a facility building.

a metal ball PROBLEM?



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